**Western and
Central Pacific
Fisheries
Commission**

TECHNICAL AND COMPLIANCE COMMITTEE
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REVIEW OF THE WCPFC ONLINE COMPLIANCE CASE FILE SYSTEM

Paper by the Secretariat

Purpose

1.   The purpose of the paper is to present the findings of the review of the WCPFC online compliance case file system (CCFS) which was commissioned by the Secretariat in 2020. The report of the review (Review Report) is attached to this paper.

Background

2.   In 2019, and specifically during TCC15, some CCMs expressed concern that the CCFS was not adequately meeting their needs. The outcome from TCC15 was that " TCC15 recommended that WCPFC16 tasks CCMs to provide the Secretariat with any suggested improvements to the online compliance case file system, so that the Secretariat can provide a paper for TCC16 that outlines the feasibility and costs, as well as any implications from potential resolution of paragraph 27 of CMM 2018-07." (TCC15 Summary Report, paragraph 175). The said TCC15 recommendation was accepted as part of the TCC15 report that was adopted by WCPFC16 in December 2020.

3.   As a result of these concerns, in early 2020 the review of the CCFS was initiated, led by Consultant, Mr Kim Duckworth (Kapiti Apps Ltd); with input from WCPFC ICT Manager Mr Tim Jones, WCPFC Compliance Manager Dr Lara Manarangi-Trott and IT Contractor Mr Nesh Petrovic (Taz-E Ltd). To facilitate the collation of CCMs views, in March 2020 CCMs were invited to answer a 32-question survey about the CCFS.

4.   Twenty-one CCMs, representing 97 – 98% of flag CCMs responsible for cases in the CCFS, responded to the survey. The survey identified a widespread desire among CCMs to have the CCFS enhanced to better meet their needs. The Review Report presents the analysis and findings of the survey results, and a recommended work programme of enhancements to the CCFS. The estimated cost of implementing the first three recommendations in the report is approximately

$50,000. The fourth recommendation suggests some further work by CCMs and TCC to review and provide guidance to the Secretariat.

Recommendation

5. TCC16 is invited to…

i.   note the findings and recommendations of the Review of the WCPFC online Compliance Case File System which confirmed a widespread desire among CCMs to have the CCFS enhanced to better meet their needs;

ii.   consider tasking the Secretariat, subject to available budget, to prioritize in its work planning for 2021 to implement recommendations 1, 2 and 3 of the Review Report as follows:
   a) undertake the ten actions identified in Table 1 of the Review Report to enhance the CCFS, to automatically notify people within the CCM when a single case is created or updated, make the CCFS easier to use, allow CCMs to browse a single list containing all cases, enhance the aggregated summary tables produced by the CCFS, improve communication with CCMs regarding which internet browsers the CCFS works best on, improve the CCFS quick guide and offer CCFS training to CCMs;
   b) undertake the one action contained in Table 1 of the Review Report to implement a proof of concept online graph / table creation tool for CCFS data; and
   c) undertake the three actions contained in Table 1 of the Review Report to clarify CCM expectations, investigate realistic options, and if possible produce a proof of concept of a tool which would allow CCMs to bulk upload comments that they had drafted offline;

iii.   note that the Review Report provides an approximate cost estimate of $50,000 for the Secretariat to implement its recommendations 1, 2 and 3; and

iv.   consider recommending a process with a view to facilitate the review and formulation of guidance to the Secretariat on:
   a)   The case Status / Outcome ontology used in the CCFS (refer page 31 of the Review Report);
   b)   The level of aggregation at which Article 25-2 alleged infringements are recorded in the CCFS (refer page 32 of the Review Report); and
   c)   The range of questions that they want aggregated summary tables (as contained in the Summary Tables of Flag CCM Responses document produced each year at TCC) to address (refer page 30 of the Review Report).

Report of the Review of the WCPFC online Compliance Case File System (CCFS)

21 July 2020

Contents

Executive Summary

In 2019, and specifically at the September 2019 meeting of the TCC, some CCMs expressed concern that the WCPFC online Compliance Case File System (CCFS) was not adequately meeting their needs. As a result of these concerns, in early 2020 this review of the CCFS was initiated. In March 2020, CCMs were invited to answer a 32 question survey regarding the CCFS. Twenty one CCMs responded to the survey. This represents 97 – 98% of flag CCMs responsible for cases in CCFS. The survey identified a widespread desire among CCMs to have the CCFS enhanced to better meet their needs. An analysis was undertaken of the survey results and this concluded that implementing the following five enhancements to the CCFS would result in at least half of the upgrade priorities indicated by responding CCMs being meet:

- Automatically notify people within your CCM when a single case is created or updated
- Make the CCFS easier to use
- Allow your CCM to browse a single list containing all cases
- Enhance the aggregated summary tables produced by the CCFS
- Allow your CCM to bulk upload comments, on single cases, that you had drafted offline.

However, whilst in the above list many CCMs get a lot of what they requested, a small number of CCMs get less of what they requested. If the requirement were to ensure that all responding CCMs get at least half of what they requested, then two further enhancements would need to be added to the list.

- Make all the functions on the CCFS work on the most common internet browsers
- Add graphing / table creation tools to the CCFS.

Following the survey, discussions were held with WCPFC staff and the relevant IT Contractor. These discussions, and the results of CCM survey, form the basis of the recommendations contained below. Upgrading the current CCFS or developing an entirely new CCFS are both viable options at this stage. Which is ultimately selected will depend primarily on (a) the money and expertise available for an upgrade/replacement project and (b) the WCPFC's strategic plans regarding its desired platform, beyond 2020, for the web-based management of data, information, documents and collaboration. Assuming that a decision is made to upgrade the current CCFS, this review makes four recommendations.

The first recommendation groups "low hanging fruit" actions into a work programme that could be implemented for approximately $30K. Each of these actions is low risk and none are expected to cost more than $5K to implement.

Recommendation 1 - The Secretariat undertake the ten actions identified in Table 1 to automatically notify people within the CCM when a single case is created or updated, make the CCFS easier to use, allow CCMs to browse a single list containing all cases, enhance the aggregated summary tables produced by the CCFS, improve communication with CCMs regarding which internet browsers the CCFS works best on, improve the CCFS quick guide and offer CCFS training to CCMs.

Note that recommendation 1 (h) is a response to "improve how the CCFS functions on the most common internet browsers". There is no specific recommendation to change the CCFS to improve its functioning on the most common browsers; as testing found that either the CCFS already worked adequately or, in the case of Export to Excel, the Secretariat stated that remediation was impractical. Refer to page 35 for details.

The second recommendation addresses CCM requests for an online graph / table creation tool for CCFS data. The proposal here is to produce an operational re-usable proof of concept of such a tool. This would cost approximately $10K.

Recommendation 2 - The Secretariat undertake the one action contained in Table 1 to implement a proof of concept online graph / table creation tool for CCFS data.

The third recommendation addresses CCM requests to be able to bulk upload comments that have been drafted offline. There are several outstanding issues regarding this request, and the potential exists for a fully-fledged solution to cost over $50K. The approach taken is to recommend that work be done to clarify the outstanding issues and investigate realistic options to meet CCM requirements. This would cost approximately $10K.

Recommendation 3 - The Secretariat undertake the three actions contained in Table 1 to clarify CCM expectations, investigate realistic options, and if possible produce a proof of concept of a tool which would allow CCMs to bulk upload comments that they had drafted offline.

During the review it was identified that the way in which case status and outcome are categorised in the CCFS, and the level of aggregation at which Article 25-2 alleged infringements are recorded in the CCFS, may not be best meeting the WCPFC's needs. It was also identified that 2020 will be the first year that the Secretariat will implement the version of aggregated summary tables drawing from the CCFS under CMM 2019-06 *Conservation and Management Measure for the Compliance Monitoring Scheme.* The fourth recommendation is that these be reviewed.

Recommendation 4 - The WCPFC review and provide guidance to the Secretariat on:

a) The case Status / Outcome ontology used in the CCFS (refer page 31),
b) The level of aggregation at which Article 25-2 alleged infringements are recorded in the CCFS (refer page 32), and
c) The range of questions that they want aggregated summary tables (as contained in the Summary Tables of Flag CCM Responses document produced each year at TCC) to address (refer page 30).

The following three possible enhancements to the CCFS were identified as low priority and no work is proposed for them:

- Allow the CCM to create draft comments for a single case (refer page 42),
- Allow the CCM to export (e.g. to PDF) the details of a single case (refer page 43),
- Allow a CCM to assign responsibility for a single case to an individual within the CCM (refer page 45).

The rationale behind each recommendation, including the constraints on what can be provided, is explained in the body of the report that follows.

If the WCPFC elects to replace, instead of upgrade, the current CCFS; then the content of this review could be included in the specifications of the replacement system.

Table 1. Consolidated list of recommended actions for the WCPFC Secretariat

ID	Relates to recommendation	Action	Refer to page
a	1	Enhance the CCFS so that it automatically notifies CCMs when a case is created or updated. This notification would be in the form of a daily summary email to a single email address nominated by each CCM. This daily summary email would identify all cases, which the CCM was authorised to view, that had been created or modified (by the Secretariat or another CCM) in the past 24 hours.	18
b	1	Initially, enhance the CCFS to make it easier to use by: simplifying the interface (including removing elements that are unnecessary to the user), improving the language used, consistently formatting links and adding screen specific help pages.	20
c	1	Subsequently, six months after these initial enhancements have been implemented, survey CCMs to verify that an appropriate level of ease-of-use has now been achieved.	20
d	1	Enhance the CCFS to make it easier to use by expanding the range of information that is shown in the six single case screens to include: observer trip data, vessel trip ID, infringement ID, trip number and provider trip number.	20
e	1	Enhance the CCFS to include a screen containing a list of all six types of case (that the user is authorised to see) combined. The primary focus of this screen should be to provide users with access to data columns that are common to most/all types of case. Users should be surveyed to determine what additional columns, that are case type specific, should also be displayed; and what Group By options are required.	26
f	1	Produce an alternative format of the aggregated summary tables in which (i) the tables are in "Classic" pivot table format, and (ii) the sub-totals and expand / contract buttons are removed, and (iii) the columns are centred; then survey CCMs on whether this alternative format is better than the current format. If CCMs prefer this alternative, then enhance the CCFS to implement it.	28
g	1	Enhance the CCFS so that the aggregated summary tables address the full range of questions required by the TCC / Commission.	28
h	1	Enhance communication with CCMs regarding (i) which internet browsers work best with the CCFS and (ii) the known limitations of the CCFS Export to Excel function.	35
i	1	Offer CCFS training to CCM users, either in the form of (i) training on the margins of other WCPFC meetings, or (ii) an online course, or (iii) a downloadable training video (or videos).	41
j	1	Improve and update the CCFS user guide to cover all the features present in the enhanced CCFS, and additionally improve how this is named and stored on the WCPFC intranet.	44
k	2	Implement a limited proof of concept online graph / table creation tool, providing CCM users with access to a small range of graphs / tables which interrogate the CCFS data that all CCMs are entitled to	39

ID	Relates to recommendation	Action	Refer to page
		6	
		view. This tool should be implemented using software that can subsequently be re-used to provide similar functionality for other types of WCPFC data.	
l	3	Undertake further consultation to clarify CCM expectations on issues such as (i) does bulk upload include documents, and (ii) what mechanism do CCMs expect to use to capture bulk comments offline, and (iii) must uploaded comments be reflected in the CCFS in real-time, and (iv) what feedback should be provided to the submitting CCM to indicate whether each of their bulk comments was successfully uploaded or not.	33
m	3	Investigate realistic options to allow CCMs to bulk upload comments, on single cases, that they have drafted offline.	33
n	3	If possible - produce a proof of concept of a tool which would allow CCMs to bulk upload comments, on single cases, that they have drafted offline.	33

Purpose

The purpose of this document is to summarise feedback received from Cooperating Members, Cooperating non-members and Participating Territories (CCMs) regarding the Western and Central Pacific Fisheries Commission's (WCPFC) online Compliance Case File System (CCFS); and to recommend a series of enhancements to the CCFS based on that feedback. This document was prepared for the WCPFC by Consultant, Mr Kim Duckworth (Kapiti Apps Ltd); with input from WCPFC ICT Manager Mr Tim Jones, WCPFC Compliance Manager Dr Lara Manarangi-Trott and IT Contractor Mr Nesh Petrovic (Taz-E Ltd). To facilitate the collation of CCMs views, in March 2020 CCMs were invited to answer a 32 question survey about the CCFS. This document is expected to provide the basis for a TCC16 paper that will describe upgrades to the CCFS that CCMs are requesting and outlining the feasibility and cost estimates for these upgrades.

Background

The Western and Central Pacific Fisheries Commission's Compliance Case File System is an online tool developed by the WCPFC Secretariat and launched in April 2016. The original requirement for the CCFS was to provide the Secretariat with a mechanism for the structured and centralised recording of correspondence related to individual alleged infringements of Conservation and Management Measures. As such, the CCFS was originally a tool to support the Secretariat's delivery of tasks under the WCPFC Compliance Monitoring Scheme (CMS). However, the eventual design of the CCFS included allowing CCMs to view "cases" and to submit information that they considered relevant to a case. A diagram that illustrates the concept for the CCFS is provided below.
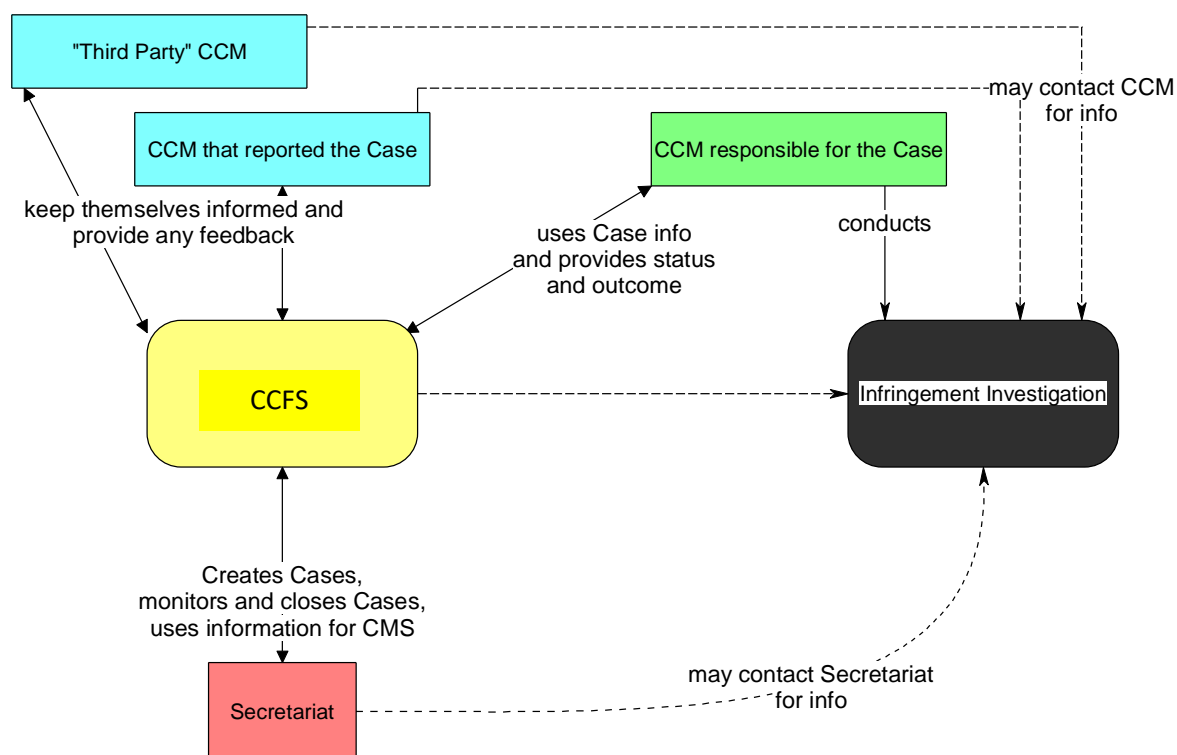

Figure 1. Illustrative diagram of the original concept for the WCPFC online compliance case file system (N. Petrovic, 2020)

Since 2019, the Commission has specified within the *Conservation and Management Measure for the Compliance Monitoring Scheme* (initially CMM 2018-07, more recently CMM 2019-06) the purpose of the CCFS. Within the measure there is direction provided to the Secretariat that the CCFS be maintained "as a secure, searchable system to store, manage and make available information to assist CCMs with tracking alleged violations by their flagged vessels." The measure also confirmed which CCMs should have access to a case, that notifications should be sent when new cases are created, guidance about what the aggregated summary tables generated from the CCFS should contain, and what information flag CCMs are to provide in response to each case related to their vessels (see inset Box 1). The four guiding principles for the Compliance Monitoring Scheme of *effectiveness, efficiency, fairness* and *cooperation towards compliance* should also be considered relevant and as guidance to the CCFS.

Section II – Principles

3.   The implementation of the CMS and its associated processes shall be conducted in accordance with the following principles for the purpose of the application of this measure:

(i)   Effectiveness: Effectively serve the purpose of this CMM to assess compliance by CCMs and assist the TCC in fulfilling the provisions of Article 14(1)(b) of the Convention;

(ii)   Efficiency: Avoid unnecessary administrative burden or costs on CCMs, the Commission or the Secretariat and assist TCC in identifying and recommending removal of duplicative reporting obligations; and

(iii)   Fairness: Promote fairness, including by: ensuring that obligations and performance expectations are clearly specified, that assessments are undertaken consistently and based on a factual assessment of available information and that CCMs are given the opportunity to participate in the process.

(iv)   Cooperation towards Compliance: Promote a supportive, collaborative, and non-adversarial approach where possible, with the aim of ensuring long-term compliance, including considering capacity assistance needs or other quality improvement and corrective action.

Section IV – WCPFC Online Compliance Case file system

9.   The Secretariat shall maintain the WCPFC online compliance case file system as a secure, searchable system to store, manage and make available information to assist CCMs with tracking alleged violations by their flagged vessels.

10.   For each case in the online system, the following information shall be provided by the flag CCM:
   (a) Has an investigation been started? (Yes/No)
   (b) If yes, what is the current status of the investigation? (Ongoing, Completed)
   (c) If the alleged violations stem from an observer report, have you obtained the observer report? (Yes/No)
   (d) If no, what steps have you taken to obtain the observer report?
   (e) What was the outcome of the investigation? (Closed – no violation; Infraction – not charged; Infraction – charged)
   (f) If no violation, provide brief explanation
   (g) If infraction, but not charged, provide brief explanation
   (h) If infraction charged, how was it charged (e.g., penalty/fine, permit sanction, verbal or written warning, etc.) and level of charged (e.g., penalty amount, length of sanction, etc.)
11.   A flag CCM shall provide updates into the online system on the progress of an investigation until its conclusion.

12.   CCMs that are relevant to a case shall be allowed to view those cases for vessels flying other flags. Relevant CCMs shall comprise the CCM that notified the case to the flag CCM, and where applicable, the coastal CCM, the ROP observer provider and the chartering CCM.

13.   The Secretariat shall notify relevant CCMs when a case is entered into the online system.

…

26.   At the same time, the Executive Director shall draw from the online case file system and transmit to:
   (i)   each flag CCM, the infringement identification relating to alleged violations by its flagged vessels on the online system for the previous year, for that CCM to review with its Draft Compliance

Box 1. Excerpts from Conservation and Management Measure for the Compliance Monitoring Scheme (CMM 2019-06) related to the CCFS

In 2019, and specifically at the September 2019 meeting of the TCC, some CCMs expressed concerns that the CCFS was not adequately meeting their needs. As a result of these concerns, in early 2020 this review of the CCFS was initiated. The Terms of Reference for this review are attached as Appendix 1.

Separately, the TCC Working Group on Observer Reports is considering what changes to the CCFS may be required to improve the tracking of observer report requests and responses.

The current online Compliance Case File System

The CCFS stores information describing six types of compliance case, being:

1. Article 25-2 Compliance Cases
2. FAD Sets Alleged Infringements
3. Observer Obstruction Alleged Infringements
4. Shark Catch Alleged Infringements
5. ROP Pre-notification Issues
6. Cetacean and Whale Shark Interactions.

Article 25(2) Compliance Cases usually result from High Seas Boarding / Inspection (HSBI), port inspections, aerial surveillance, or Vessel Monitoring System incidents. Article 25(2) Compliance Cases are created by the Secretariat individually, based on email communications from one CCM to another CCM to request an explanation or investigation into the conduct of its vessel and/or its nationals. The responses among CCMs to a case usually occur through exchange of letters through email, and the Secretariat posts copies of the correspondence that are exchanged into the CCFS. In some cases, CCMs provide comments or clarifications directly into CCFS.

Cases in the other five lists are created by queries run against the Regional Observer Programme (ROP) data. Updates to these cases are made periodically, and through procedures that have been developed by the Secretariat and Pacific Communities Oceanic Fisheries Programme (SPC-OFP), who manage the WCPFC scientific data holdings. In the past the frequency of updates was primarily constrained by the frequency at which the SPC-OFP could provide ROP data to the Secretariat; but more recently the primary constraint has become the availability, within the Secretariat, of IT professionals capable of loading this data. In late 2019, an update was occurring every three to four months.

Access to the CCFS is via a website. After logging on, the user selects which of the six types of case they wish to work with. The user is then shown the list of cases that they are authorised to see. The user can search, filter or sort the cases in this list. The user can click on a case and open it for viewing or, if authorised, editing. Within each case, users can enter comments regarding the case and attach documents concerning the case. The Secretariat will periodically update the status and investigation

outcome for a case. A record is kept, and made available to users, of all changes that are made to the information describing a case.

Components of the current online Compliance Case File System
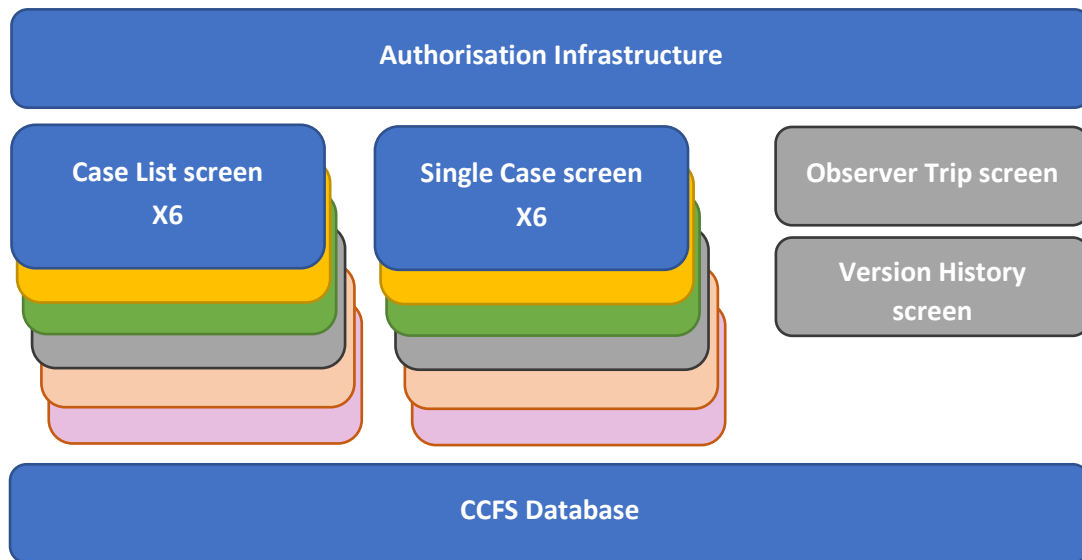
Figure 2. Major components of the current online Compliance Case File system

The CCFS is a web-based system which includes:

- An authorisation infrastructure, which controls what data the user can view / edit. Specifically:
  - Flag CCMs can view relevant cases for vessels flying their flag
  - Notifying CCMs, and the Regional Observer Programme (ROP) observer provider that was responsible for the placement of the observer, can view relevant cases for vessels flying other flags
  - Where applicable, coastal CCMs and chartering CCMs can view relevant cases
  - The Secretariat can create / load cases, add comments, update individual CCM access permissions for individual cases and observer trips and set the infringement status and investigation outcome of cases.
- Six case list screens, one for each type of case stored in the system, which allow:
  - a user to change the columns displayed, and how cases are grouped
  - a user to search for a case, or filter or sort lists of cases
  - a user to export the list of cases to excel
  - a user to select and open an individual case.
- Six single case screens, one for each type of case stored in the system, which allow:
  - a user to view the details of the case or add comments to the case
  - a user to attach supporting documents to the case
  - a Secretariat user to edit the details of the case.
- An Observer Trip screen, associated with five of the six types of case stored in the system, which allows the user to view the details of the observer trip which triggered that case.
- A Version History screen, associated with all six types of case stored in the system, which allows the user to view the details of changes that have been made to the case.
- A database of case information, which:
  - Provides case data to the six case list screens

- o Provides case data and documents to, and receives data and documents from, the six single case screens
- o Provides data to the Observer Trip and Version History screens
- o Periodically receives bulk uploads of data describing five types of case from the Regional Observer Programme database maintained by the SPC-OFP
- o Serves as the source of data for a Secretariat data warehouse, which automatically generates pivot tables of case data. These pivot tables are then used to create the aggregated summary tables of case statistics that are included in the yearly Compliance Monitoring Report (CMR).

The current CCFS was developed using Microsoft's SharePoint product. Wikipedia describes SharePoint as "a web-based collaborative platform" and goes onto say that it is "primarily sold as a document management and storage system, but the product is highly configurable".

CCM feedback on the current CCFS

As part of this review, in March 2020 CCMs were invited to answer a 32 question survey regarding the CCFS. The questions asked are attached as Appendix 2. The questions covered: which features of the CCFS the CCMs currently used, how easy CCMs found these features to use, and which aspects of the CCFS CCMs wanted to see enhanced. Twenty one CCMs responded to the survey[1].

All the cases in the CCFS have a CCM responsible for investigating the case. All the article 25-2 cases in the CCFS have both a CCM responsible for investigating the case and a CCM that initiated the case. To assess whether the respondents to the survey were representative of the users of the CCFS, the list of CCMs who replied to the survey was compared to the list of CCMs Responsible and Initiating CCMs recorded in the CCFS and the following was found:

- for 98% of the cases recorded in the CCFS, the CCM responsible for the case responded to the survey.
- for 97% of the article 25-2 cases recorded in the CCFS, the CCM responsible for the case responded to the survey.
- for 58% of the article 25-2 cases recorded in the CCFS, the CCM that initiated the case responded to the survey[2].

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[1] Australia, China, Cook Islands, European Union, Federated States of Micronesia, Fiji, Indonesia, Japan, Kiribati, Republic of Korea, Liberia, Republic of the Marshall Islands Nauru, New Zealand, Nicaragua, Papua New Guinea, Philippines, Chinese Taipei, Thailand, Tuvalu and the United States.

[2] France did not respond to the survey but was the initiating CCM in 40% of article 25-2 cases.

Features of the current CCFS that are most widely used

The survey included a set of seven questions which asked CCMs to indicate how often they used the features of the current CCFS. Twenty one CCMs responded to these questions. The following methodology was used to analyse which features were most widely used.

1) Responses were assigned the following numeric values -

Usage indicated by the CCM	Value assigned
Never	0
Rarely	1
Often	2

2) The values assigned to each of the seven features of the current CCFS, by the twenty one CCMs who responded, were then summed, sorted, and inserted into the following table.

Feature	CCM Usage
Use the current CCFS to view the details of a single case	31
Use the current CCFS to search for a single case	30
Use the current CCFS to browse all cases to monitor their status	30
Use the current CCFS to add a comment to a single case	26
Use the aggregated summary tables produced by the current CCFS	24
Read the quick guide (user documentation) available for the current CCFS	22
Use the current CCFS to export / download all cases	21

If all twenty one responding CCMs had ranked a feature as often used, then that feature would have a CCM Usage of 42 (2 x 21). Therefore, the values in the right-hand column of the table provide a measure of CCM usage of each feature out of a maximum possible score of 42.

The most used feature - *view the details of a single case* – was used rarely by nine CCMs (43%) and often by eleven CCMs (53%). Even the least used feature of the current CCFS - *export / download all cases* – was still used rarely by nine CCMs (43%) and often by six CCMs (26%). One CCM indicated that they did not use the CCFS at all.

Ease of use of the current CCFS

The survey included a set of nine questions which asked CCMs to indicate how easy they found each of the features of the current CCFS to use. Twenty CCMs responded to these questions. The following methodology was used to analyse which features were easy to use.

1) Responses were assigned the following numeric values -

Ease indicated by the CCM	Value assigned
Difficult	0
Neither difficult nor easy	1
Easy	2

2) The ease-of-use values assigned to each of the nine features of the current CCFS, by the twenty CCMs who responded, were then summed, sorted, and inserted into the following table.

Feature	CCM Ease of Use
Logon	34
View the details of a single case	28
Add a comment to a single case	28
Navigate around the CCFS	26
Browse all cases to monitor their status	24
Search for a single case	23
Identify potential anomalies in the implementation of obligations by a CCM	21
Review patterns / trends in the implementation of obligations covered by the CCFS	21
Export / download all cases	17

If all twenty responding CCMs had ranked a feature as easy to use, then that feature would have a CCM Ease of Use of 40 (2 x 20). Therefore, the values in the right-hand column of the table provide a measure of how easy each feature is to use out of a maximum possible score of 40.

Even the easiest to use feature of the current CCFS - *logon* – was only ranked as easy to use by 13 CCMs (65%). Logging on was the only feature which more than half of the respondents considered easy to use. For the other features combined:

- An average of 35% of CCMs responded that the feature was easy to use
- An average of 48% of CCMs responded that the feature was neither difficult nor easy to use
- An average of 18% of CCMs responded that the feature was difficult to use.

The most widely requested enhancements – basic analysis

The survey included a set of questions which asked the CCMs to prioritise twelve possible enhancements to the CCFS. The possible enhancements had been identified during TCC15 and in a subsequent preliminary review of the CCFS. Twenty CCMs responded to these questions. The CCMs were asked to categorise each possible enhancement as being of "high", "medium", "low" or "zero" priority for them. The following methodology was used to analyse which enhancements were most widely requested.

1) Responses were assigned the following numeric values -

Priority indicated by the CCM	Value assigned
Zero	0
Low	1
Medium	2
High	4

2) The values assigned to each of the twelve possible enhancements, by the twenty CCMs who responded, were then summed, sorted, and inserted into the following table.

Possible enhancement	CCM Priority
Automatically notify people within your CCM when a single case is created or updated	67
Make the CCFS easier to use	56
Allow your CCM to browse a single list containing all cases	56
Enhance the aggregated summary tables produced by the CCFS	51
Increase the training options available for CCFS users	47
Allow your CCM to bulk upload comments that you had drafted offline	46
Add graphing / table creation tools to the CCFS	46
Make all of the functions on the CCFS work on the most common internet browsers	43
Allow your CCM to create draft comments for a single case	41
Allow your CCM to export (e.g. to PDF) the details of a single case	40
Improve the Quick Guide (CCFS user documentation)	39
Allow your CCM to assign responsibility for a single case to an individual	37

If all twenty responding CCMs had ranked a possible enhancement as high priority, then that enhancement would have a CCM Priority of 80 (4 x 20). Therefore, the values in the right-hand column of the table provide a measure of priority for enhancement out of a maximum possible score of 80.

The most requested enhancement - *automatically notify people within your CCM when a single case is created or updated* – scored 83% (67 / 80) of the theoretical maximum score. As such, *automatically notify people* is a major issue for almost all CCMs.

The most widely requested enhancements – scaled analysis

The survey requested that each CCM not assign more than four possible enhancements to any priority category. Approximately half of the CCMs conformed with this request. To avoid biasing the results of the survey in favour of those CCMs that identified many high priority enhancements, an additional analysis was carried out.

1) For each CCM, the priority values assigned by that CCM were summed for the twelve possible enhancements.
2) Across all CCMs, the average of the summed priority values was calculated. This number was accessed to be approximately 28.
3) For each CCM, a scaling factor was then calculated; this being the average of the summed priority values for all CCMs, divided by that individual CCMs summed priority values. For example, if CCM ABC assigned a total of 42 priority value points across the twelve possible enhancements, then CCM ABC's scaling factor was calculated to be 0.66 (28 / 42).
4) The priority values assigned by each CCM to each possible enhancement were then multiplied by that CCMs scaling factor. The effect was that all twenty CCMs were each assigning 28 points of Scaled Priority Values across twelve possible enhancements.
5) The Scaled Priority Values assigned to each of the twelve possible enhancements were then summed, sorted, and inserted into the following table.

Possible enhancement	Scaled CCM Priority
Automatically notify people within your CCM when a single case is created or updated	69.3
Make the CCFS easier to use	57.9
Allow your CCM to browse a single list containing all cases	55.9
Enhance the aggregated summary tables produced by the CCFS	53.0
Allow your CCM to bulk upload comments that you had drafted offline	48.7
Add graphing / table creation tools to the CCFS	45.8
Increase the training options available for CCFS users	44.4
Make all the functions on the CCFS work on the most common internet browsers	43.4
Allow your CCM to create draft comments for a single case	39.7
Allow your CCM to export (e.g. to PDF) the details of a single case	38.8
Improve the Quick Guide (CCFS user documentation)	37.3
Allow your CCM to assign responsibility for a single case to an individual	34.9

The top four enhancements in the scaled CCM priority table are the same as the top four items in the base (unscaled) CCM priority table. Ranks five to seven contain the same enhancements in both lists, but the sequencing of these enhancements has changed. The enhancements ranked eight to twelve are the same in both lists. The scaled analysis slightly "stretches" the range of Priority Scores, with the most popular enhancements being identified as even more desired and the least popular enhancements identified as even less desired. However, it appears that none of the possible enhancements was outrightly undesirable as even the least desired enhancement - *allow your CCM to assign responsibility for a single case to an individual within your CCM* – was still rated as "high priority" by 20% of CCMs. All the twelve possible enhancements were supported by some CCMs.

The minimum list of enhancements required to meet half of the priorities indicated by CCMs

An analysis was carried out, using the Scaled Priority Values, to determine how many enhancements would need to be implemented to meet at least half of the priorities indicated by CCMs. This analysis identified a minimum list of five enhancements, these being:

1) Automatically notify people within your CCM when a single case is created or updated
2) Make the CCFS easier to use
3) Allow your CCM to browse a single list containing all cases
4) Enhance the aggregated summary tables produced by the CCFS
5) Allow your CCM to bulk upload comments, on single cases, that you had drafted offline.

However, in the above analysis many CCMs get a lot of what they requested while a small number of CCMs get less of what they requested. If the requirement were to ensure that all CCMs get at least half of what they requested, then two further enhancements would need to be added to the list.

6) Make all the functions on the CCFS work on the most common internet browsers. Adding this would mean that every CCM received at least 48% of the enhancements that they had requested
7) Add graphing / table creation tools to the CCFS. Further adding this would mean that every CCM received at least 65% of the enhancements that they had requested.

These analyses do not take into consideration how much cost / effort is required to implement any given enhancement. It may be that, despite enhancement A having a higher priority, enhancements B and C can be implemented for less cost than A; while B and C combined have a higher desirability to CCMs than A alone.

Upgrading the CCFS

What software platform should be used to upgrade the CCFS?

To address the CCM needs identified above, the WCPFC will need to either upgrade the current CCFS system that was built using SharePoint, or build a new system using a platform other than SharePoint. It is not obvious which of these options should be chosen. This review found that the current CCFS is <u>not</u> fundamentally "broken". In general[3], upgrading the current CCFS to meet the needs identified by CCMs would not be either prohibitively expensive or risky. What is required is an evolutionary, not revolutionary, upgrade. Microsoft continues to support and invest in its SharePoint product. SharePoint is a safe choice that offers many information management and user collaboration capabilities to the WCPFC. Several other WCPFC systems, including the Commission's Intranet, Compliance Monitoring Scheme and Vessel Register have been developed in SharePoint. The counter-argument is that, in 2020, there are many capable and proven alternatives to SharePoint. There are no functions within the CCFS that are highly fisheries specific. Much of the functionality that would be required to implement a new CCFS could, relatively easily, be obtained using one of these alternative tools. If compliance cases are viewed as widgets, then many software tools exist which would allow users to (1) view summary details of all widgets, and (2) search for a particular widget, and (3) view, edit and create records of widgets, and (4) add comments about a widget, and (5) attach documents regarding a widget.

Over the past few years, the WCPFC has managed to implement several new systems (including the CCFS, Compliance Monitoring Scheme and Record of Fishing Vessels) at a modest cost. One of the means to keep costs down has been to use SharePoint in its out-of-the-box configuration. By doing this, the development of these new systems has substantially conformed to the 80/20 rule[4]. The situation that now confronts the WCPFC is that refining these systems further will often require customising SharePoint and moving away from its out-of-the-box configuration. In doing so, the WCPFC will begin to progressively move further onto the wrong side of the 80/20 rule. However, this is true regardless of whether the current (SharePoint) CCFS is enhanced or a completely new (non-SharePoint) CCFS is developed. The WCPFC (CCFS) requirement that is likely to most challenge both SharePoint and its alternatives is collaboration between organisations. Many modern platforms support, out-of-the-box, collaboration within an organisation; but collaboration between organisations is a more niche requirement that will frequently result in needing to choose between restricted functionality or significantly more customisation.

The average lifespan of bespoke[5] software systems is between five and ten years. The Secretariat will frequently be needing to make decisions regarding what software platform it uses to develop bespoke systems. Given the largely[6] generic nature of the WCPFC's needs, now and in the foreseeable future, there will be many viable candidate platforms to choose from; and the "best" platforms will change from year to year. For the reasons given above, this review does not recommend a particular platform for the upgrade of the CCFS. The recommendations that follow, regarding how to upgrade the CCFS to better meet CCM needs, have been written from a starting assumption that SharePoint is used for the upgrade, but if the Secretariat does decide to develop a replacement CCFS on a platform other than SharePoint then it would be easy to turn these recommendations into a specification for an entirely new system.

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[3] The exception might be *Allow CCMs to bulk upload comments*
[4] 80% of the benefits come from 20% of the effort
[5] "Specially made for a particular organization or purpose"
[6] The possible exceptions are the WCPFC's need for inter-agency cooperation tools and the VMS system.

Possible enhancement 1 – Automatically notify people within the CCM when a single case is created or updated

Having the CCFS automatically notify relevant users when a case is created or updated was easily the most requested upgrade.

Automatically notify designated people within your CCM when a single case is created or updated

Answered: 20   Skipped: 1
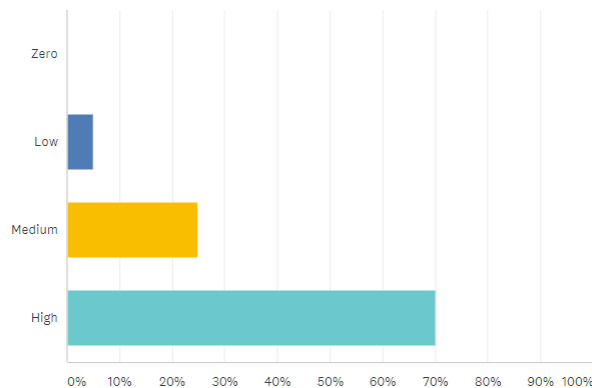
In addition to topping this list, CCMs made the following comments regarding automatic notifications in response to question 31 (are there other upgrades to the CCFS that your CCM wants to propose) of the survey:

- *Having an email notification of potential breaches to the flag state, would be of immense value.*
- *We would like to address our anticipation to have the point 21 "Automatically notify when a single case is created or updated" as the top priority for future workplan. Automatic notification of the cases for us is really essential. Because we would like to start the investigation instantly after a case was reported in order to take actions to alleged infringement or to prevent further violation. Also, automatic notification may prevent CCMs form neglecting important information on compliance cases.*
- *Options to look into where a new case is uploaded onto the CCFS and some kind of alert to be sent to individual CCM for their actions and this can be either through an email alert or flagging it on the case that newly uploaded for a member to know it's a new case to be reviewed*
- *Another issue is the cost of establishing alerts in the system, which results in a lot of email traffic, which is a cost. We think it may be useful to consider ways that the alerts can be grouped, or users can dictate their own personal settings (i.e. frequency of reports, collation of reports etc.).*

The push for automatic notifications is presumably driven by a need to reduce:

- the CCFS workload on CCMs. The current CCFS requires that a CCM check six screens to determine whether there is a new / modified case that is relevant to it, although a subsequent recommendation[7] of this review offers the possibility of reducing this to one screen
- the risk that a CCM will not notice a new / modified case that is relevant to it.

The Secretariat has identified its preferred method for providing this enhancement. This method would:

- send a daily summary email to a single email address nominated by each CCM. This daily summary email would identify all cases, which that CCM was authorised to view, that had been created or modified (by the Secretariat or another CCM) in the past 24 hours
- work in SharePoint 2013 (the version of SharePoint that is currently being used by the WCPFC) but it is unknown whether it would continue to work in later versions of SharePoint
- leave the Secretariat with the administrative overhead of needing to simultaneously maintain CCM logon details and email addresses on three different systems[8].

> **ACTION –** The Secretariat enhance the CCFS so that it automatically notifies CCMs when a case is created or updated. This notification would be in the form of a daily summary email to a single email address nominated by each CCM. This daily summary email would identify all cases, which the CCM was authorised to view, that had been created or modified (by the Secretariat or another CCM) in the past 24 hours.

This action would cost less than $5K to implement.

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[7] Allow the CCM to browse a single list containing all cases

[8] The WCPFC Secretariat has a general issue with maintaining CCM user details for its systems. These details include user contact details (including email addresses), user preferences (including for automatic alerts), and user roles (including system read/write permissions). Currently, each CCM has just two logon profiles for all WCPFC SharePoint-based systems. This means that there is little flexibility in how CCMs assign responsibility for WCPFC online systems among their staff. Ideally, an online user management system would exist that allowed CCMs to self-manage system access, contact details, roles and preferences at the level of the individual user; and this system would be integrated into the full range of WCPFC systems that CCMs have access to.

Possible enhancement 2 - Make the CCFS easier to use

Making the CCFS easier to use was the second to most widely requested enhancement to the CCFS.

Make the CCFS easier to use

Answered: 20   Skipped: 1
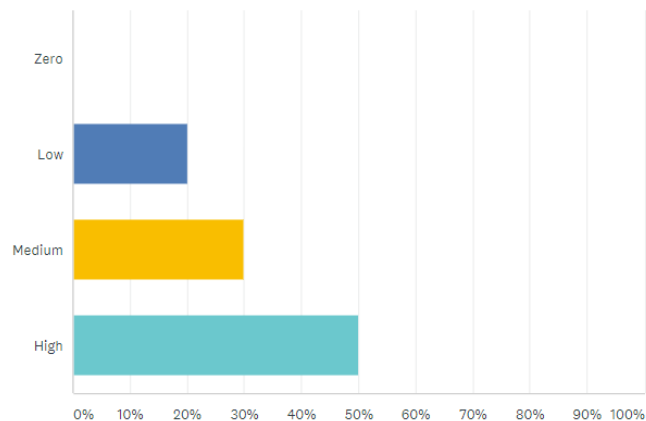
The survey included a further set of questions that asked CCMs to rate how easy / difficult to use they found each of nine features of the current CCFS. Caution is needed in interpreting these results, as there is a relationship between the ease of use of a feature and how often that feature is used. Users are likely to find features that they use often easier to use. Equally, users are not likely to use features that they find difficult to use. However, if a feature is used often but people are still finding it difficult to use, then that feature could safely be prioritised for improvement. The following table incorporates CCM feedback on ease of use alongside CCM feedback on how often they used a feature.

Feature	CCM Ease of Use	CCM Usage	Regarding improving ease of use -
Logon	34	Universal	While there is still some room for improvement, these features of the current CCFS appear to be of lower priority. They are used often and CCMs find them relatively easy to use.
View the details of a single case	28	31	
Add a comment to a single case	28	26	
Navigate around the CCFS	26	Universal	These features of the current CCFS appear to be of higher priority. Despite being used often, CCMs do not find them relatively easy to use.
Browse all cases to monitor their status	24	30	
Search for a single case	23	30	
Identify potential anomalies in the implementation of obligations by a CCM; and review patterns / trends in the implementation of obligations covered by the CCFS	21	24	These features of the current CCFS appear to be of medium or unknown priority and may benefit from further investigation.
Export / download all cases	17	21	

In addition to the analysis above, the following comments were received from CCMs in response to question 31 (are there other upgrades to the CCFS that your CCM wants to propose) of the survey:

- *Expansion Function for Compliance Cases Add "Expand all" and "Collapse all" function to the CCFS for overview of all relevant cases: It would be very helpful for us to view the cases if there are "Expand all" and "Collapse all" buttons as for the meeting documents on the "Meetings" pages of the WCPFC website.*
- *There are a number of functions of the current CCFS that we never or very rarely use because they are clunky or difficult to navigate, but that could be very useful with some minor improvements.*
- *There are also potential improvements that could be made to the way the case file system is organized. For example, the way each case file is set up in the system now, you have to click and open a number of different boxes and pages to view all relevant and associated information for each case. It would be much easier to navigate if all information was included on one page. That way each individual case, with all relevant details, could be easily viewed and/or exported without having to search through a number of different pages.*
- *The current Compliance Monitoring Report lists each case/allegation by a case file number, but the cases in the CCFS are organized according to CMM infringements. Currently, CCMs need to click through a number of different boxes in the CCFS to find the case file number associated with the CMR for each relevant case, which can be a bit arduous and confusing. It would be much easier to follow along with the CMR, and pull up all relevant information to report out on each case, if either the two systems followed the same organization system, or if all information for each case was easily accessible on one singular page in the CCFS.*
- *Going back option to be made easy.*

Other comments potentially relating to ease of use have been included in later sections of this document, where those comments relate to specific features that were being described in those sections.

Issues (including the known unknowns)

How easy is easy enough?

Currently, it is unknown whether CCM expectations are that:

- The CCFS will be easy to use <u>if</u> the user has already read the user guide and / or undertaken CCFS training; or
- The CCFS will be easy to use even for users who <u>have not</u> read the user guide and / or undertaken CCFS training.

The first standard is a much "lower bar" than the second standard, and the CCFS may already be close to meeting the first[9]. If CCM's expectations are the second standard, then it is likely that the current CCFS falls well short of this standard.

Are other problems with the CCFS impacting on perceptions that the CCFS is difficult to use?

The possibility exists that other problems with the CCFS (lack of automatic notifications, problems with Export to Excel, etc) are impacting on CCMs perceptions that the CCFS is difficult to use, although the five comments provided in response to question 31 indicate that there are some ease-of-use concerns that are not related to other inadequacies with the system.

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[9] Assuming that an adequate user guide and training programme existed. These are recommended elsewhere in this review.

Is it only the CCFS that is a problem?

The CCFS shares many aspects of its interface with the WCPFC intranet document library, Record of Fishing Vessels and Compliance Monitoring Scheme. Currently, it is unknown whether it is only the CCFS which has ease-of-use issues or whether the other sub-systems share the same issues.

Where is the appropriate balance between ease-of-use and ease of development / maintenance?

As noted earlier, the CCFS has been developed largely using out-of-the-box SharePoint and many aspects of its interface are common with the other sub-systems (document library, Record of Fishing Vessels and Compliance Monitoring Scheme) of the WCPFC intranet. This approach has allowed the Secretariat to make the greatest number of new systems available at the minimum cost, for both initial development and ongoing maintenance.

The CCFS is fundamentally a small / simple system consisting of six list screens, each linking to a single case viewing/editing screen, plus an observer trip details screen.   Because the CCFS is small / simple system, there is little doubt that it could be refined so that it was easy to use; even for users who had not read the user guide and / or undertaken CCFS training. But, this level of ease-of-use would require departing from out-of-the-box SharePoint, and this would come at a cost both in initial development and in ongoing maintenance. Significantly enhancing ease-of-use might push the WCPFC onto the wrong side of the 80/20 rule.

Discussion

Currently, any simple assessment of which improvements should be made to improve the ease-of-use of the CCFS will largely come down to how the assessor weights ease-of-use versus ease-of-development/maintenance. Such an assessment will, by its nature, be subjective. A better (objective) assessment would quantify, over the remaining lifetime of the CCFS:

- The amount of effort that CCMs and the Secretariat would save if the CCFS was made easier to use, verses
- The amount of effort that would be required to implement and maintain the changes required to make the CCFS easier to use.

Currently, there are many unknowns on both sides of this equation and therefore a significant amount of effort would be required to make such an objective assessment. The WCPFC could put its efforts into undertaking an objective assessment, or it could make some assumptions about the costs / benefits of improving ease of use and put its effort into making improvements.

There are two proven approaches that the WCPFC could take to improving ease-of-use.

Approach 1 – undertake a user centred design process

The best practice in developing highly usable systems is employing a user-centred design process. There are a variety of methods that can be used to achieve this, including: baseline usability testing, focus groups, wireframe testing, first click testing, and usability testing to gauge user interaction. Regardless of which method (or preferably set of methods) is used, the two keys to user-centred design are (1) knowing the user[10], and (2) iterative testing and improvement[11]. The known unknowns identified above could be resolved while a user centred design process was undertaken. If properly implemented, this approach could be expected to greatly improve the ease-of-use of the CCFS. But it should also be anticipated that the process of identifying the required changes (without making them) would cost $10K and take several months.

While the WCPFC should seriously consider a full user-centric design process for new systems, it is not clear that this level of effort is appropriate for the existing CCFS. There is an alternative approach which, while also proven, takes a few short cuts.

Approach 2 – adopt a principles-based methodology for improving ease-of-use

There has been a large amount of research into what makes systems easy to use. As a result of this research, principles exist which define how user interfaces should be designed to generally achieve a high level of ease-of-use. These principles include:

- Keep it simple. Avoid elements that are unnecessary to the user.
- Make the interface match the user's task sequences.
- Use clear and simple language. Create patterns in language. Use terminology that matches the users' and is consistent with their expectations.
- Offer context sensitive help.
- Be consistent.

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[10] Including understanding their goals, skills, preferences, and tendencies.
[11] Evaluate the usability of the system, identify possible improvements, implement the possible improvements, then re-test the system and measure the effectiveness of usability changes. Repeat until a system that meets the required level of usability is achieved.

Using these principles, it is possible to imagine a set of changes to the CCFS that would significantly improve its ease-of-use. For example, on the six list of cases screens:

- Adding a *Help* button that links to page specific help.
- Removing the current *Browse, Items and List* tabs (marked "A" in Figure 3). Between them, these tabs show the user 38 options, almost all of which are disabled. Assuming that Automatic Notifications is also implemented, the only option in the tabs that is likely to be of interest to the user is Export to Excel, but this could be made into its own button and located somewhere more obvious.
- Removing, or making collapsible, the *WCPFC Intranet* banner (marked "B"). Via five drop down menus this banner provides the user with access to 69 resources on the WCPFC intranet, but does the user need these resources to achieve their CCFS goals or is this distracting clutter?
- Improve the language used. For example – what should "By CCM Responsible" (marked "C") mean to a new user? The language used should be consistently worded in verb then noun format (e.g. Group by CCM Responsible)
- Format the Case ID column (marked "D") to indicate that it is clickable. Why are the other linked columns (Vessel, Initiated By, Alleged Infringements) formatted blue while Case ID is not? How is a new user to know that if they want to open a case then they must click on the Case ID?
- Removing any unnecessary group-by options. There are currently an average of 11 group-by options for each list-of-cases screen, but are these all needed?
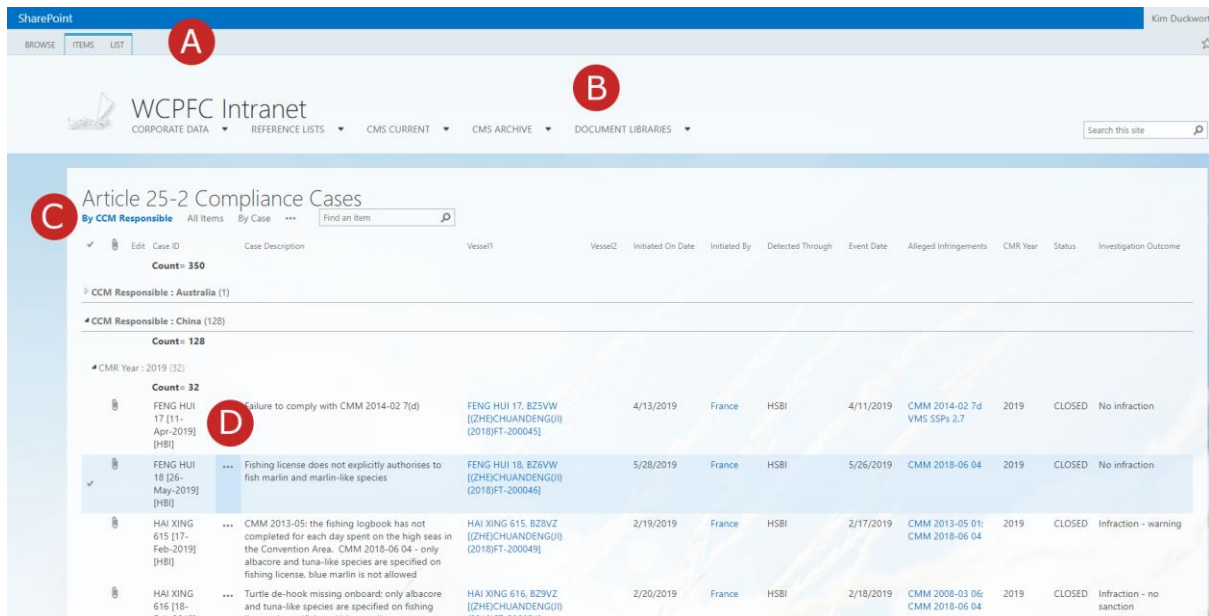

Figure 3. Example of the current List of Cases screens

A similar set of changes could be envisaged for the six single case viewing / editing screens.

Such a principles-based approach would provide the WCPFC with a realistic opportunity to improve the ease-of-use of the CCFS without the delay and cost of a full user-centric design process. It is important to understand that many of the changes described above would deviate from out-of-the-box SharePoint and would mean that the CCFS and other WCPFC intranet sub-systems no longer shared a common interface, but the same would almost certainly be true if a full user-centric design process was undertaken.

Because there is a realistic probability that the ease-of-use of the CCFS could be significantly improved by adopting the quicker / cheaper principles based approach, it is this approach that is recommended.

> **ACTION** – The Secretariat initially enhance the CCFS to make it easier to use by: simplifying the interface (including removing elements that are unnecessary to the user), improving the language used, consistently formatting links and adding screen specific help pages.

This action would cost less than $5K to implement.

While it is highly likely that the recommendation above will significantly improve the ease-of-use of the CCFS, it is also possible that these improvements alone will fail to deliver the magnitude of ease-of-use improvements desired by CCMs. To address this possibility, a further review is also proposed.

> **ACTION** – The Secretariat subsequently (six months after these initial enhancements have been implemented) survey CCMs to verify that an appropriate level of ease-of-use has now been achieved.

Information missing from the single case screens

Observer trip data is currently not viewable on the six single case screens and the user must navigate to the Observed Vessel Trips screen to view this data. From a user perspective, this is inefficient.

> **ACTION** - The Secretariat enhance the CCFS to make it easier to use by expanding the range of information that is shown in the six single case screens to include: observer trip data, vessel trip ID, infringement ID, trip number and provider trip number.

This action would cost less than $5K to implement.

Issues with the back button

When using the six list of cases screens, the user will often be directed onto a new screen without realising that this has happened. Because of this, the user can be left with the impression that the browsers back button is not working correctly when in fact the back button is working and the issue is that the user does not realise that they are moving back between different pages. Ideally, the page titles of the screens would change so that the user knew they were moving between pages. At a minimum this behaviour should be explained to users in the CCFS user manual and training course.

Possible enhancement 3 - Allow the CCM to browse a single list containing all cases

The survey offered CCMs the option of a single screen that included information on all six types of case. This option was the third most requested upgrade to the CCFS, only slightly behind *Make the CCFS easier to use*.

Allow your CCM to browse a single list containing all cases.
This single list would combine: Article 25-2, FAD sets,
Observer Obstruction, Shark Catch, ROP Pre-Notification
and Cetacean Interaction cases

Answered: 20   Skipped: 1
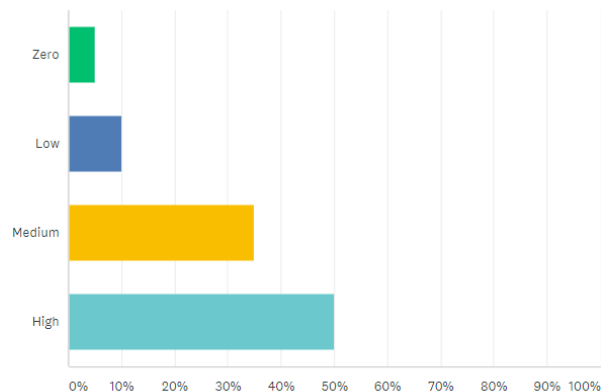
Additionally, the following comments were received from CCMs in response to question 31 (are there other upgrades to the CCFS that your CCM wants to propose) of the survey:

- *If the CCFS can be user-friendly where CCM's can be able to identify and filter which cases are Not reviewed, investigation ongoing and which ones are closed. And some sort of filter for past cases that are requested and agreed closed not to be mixed up with Not reviewed and ongoing cases to avoid any confusion*
- *Having archival records of past cases so that there is clear demarcation of cleared cases and those that are pending.*

The current CCFS requires that users check six screens to determine if a case relevant to them has been created or updated. If there was one screen which contained information on all six types of case, and this one screen fulfilled the most common user needs, then this would save CCMs a lot of time. This concept is intuitively appealing but will be surprisingly difficult to implement. The reason being that different information is collected for each of the six types of case, and different ways of categorising information are used for each. The five ROP related types of case are similar to each other, but the way Article 25-2 cases are described is significantly different.

It is possible to envisage a *list of cases of all types combined* screen which would meet a selection of common user needs and thereby reduce the need for the user to visit the six case-type-specific screens. The *list of cases of all types combined* screen would not be intended to entirely replace the six case-type-specific screens, as the case-type-specific screens would continue to each provide a superior overview of one type of case. Instead, to fill the gap in the capability currently provided by the CCFS, the primary focus of the *list of cases of all types combined* screen would be to provide users with access to data columns that are common to most/all types of case. Such data columns include:

- Case ID
- The date and time that the case was created or last edited
- The CCM that created or last edited the case
- The type of case (Article 25-2, FAD Sets, etc)
- Case status / investigation outcome
- CMR year
- Initiating CCM or organisation
- CCM Responsible or Flag CCM
- date of the alleged infringement
- Vessel(s) involved in the alleged infringement [12]
- Observer trip ID.

Examples of common user needs to which the *list of cases of all types combined* screen could be put include:

- As a "to-do" list for the CCM. In this situation the screen would show open cases which had recently been created or edited, and by whom. By examining this list, the CCM could quickly identify all the cases that were waiting on their input
- To identify all the cases related to one vessel
- To identify all the cases related to one observer trip
- To identify all the cases related to one period of time.

The Secretariat has identified a low-cost method, which does not require changes to the underlying database, for providing this enhancement. The constraints of this mechanism include (i) that it will not be possible for the user to sort / filter the *list of cases of all types combined* with a single mouse-click, and (ii) that Export to Excel will not work with it.

> **ACTION** - The Secretariat enhance the CCFS to include a screen containing a list of all six types of case (that the user is authorised to see) combined. The primary focus of this screen should be to provide users with access to data columns that are common to most/all types of case. Users should be surveyed to determine what additional columns, that are case type specific, should also be displayed; and what Group By options are required.

This action would cost less than $5K to implement. A more fully featured approach, which required changes to the database underlying the CCFS, would cost between $10K to $20K to implement. At a later date, the WCPFC could re-consider whether this was what it really wanted. Initially implementing the low-cost approach proposed would provide valuable knowledge for later implementing the fully featured approach.

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[12] Consideration will need to be given to the fact that some cases involve more than one vessel.

Possible enhancement 4 - Enhance the aggregated summary tables produced by the CCFS

The survey offered CCMs the option of enhancing the aggregated summary tables produced by the CCFS. This option was the fourth most requested upgrade to the CCFS.

Enhance the aggregated summary tables produced by the CCFS, so that your CCM can independently analyse patterns / trends across the full range of summary data held in the CCFS

Answered: 20   Skipped: 1
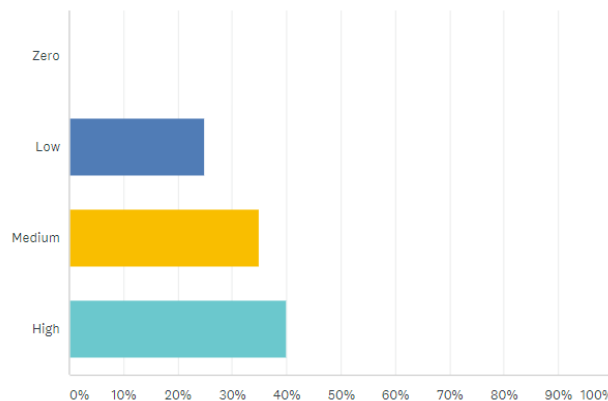
The following additional comments were received from CCMs in response to question 31 (are there other upgrades to the CCFS that your CCM wants to propose) of the survey:

- *Information on summary tables is too complex to identify potential violation for each case.*
- *previous versions of the aggregated summary tables were difficult for us to understand and we weren't quite sure how to use them as a useful tool. We are hopeful that modifications based on discussions at WCPFC16 will greatly improve the summary tables and our ability as CCMs to use them to identify potential anomalies and trends.*

Data from the CCFS is automatically copied into the Secretariat's data warehouse. The data warehouse includes a tool which generates pivot tables showing - for each CMM / topic - a count of cases by case Status, Outcome, Year and CCM responsible. These pivot tables are subsequently inserted, as static aggregated summary tables, into reports such as the *Summary Tables of Flag CCM Responses to Alleged Infringements Notified in The WCPFC Online Compliance Case File System*[13]. Requirements for these tables are regularly reviewed, and CMM2019-06 *Conservation and Management Measure for the Compliance Monitoring Scheme*, agreed in December 2019, specifies that the range of aggregated summary tables be expanded to include - Case Status and Outcome, by CCM responsible, by CMM and year.

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[13] WCPFC-TCC15-2019-dCMR02

The format of the aggregated summary tables

The following is a fictionalised example of how the CCFS aggregated summary tables are currently formatted in the *Summary Tables of Flag CCM Responses* report.

Counts of cases by CCM by year and by Investigation Status

Row Labels	Flag CCM Notified	Flag CCM Investigation Completed				Grand Total
	.	Infraction - no sanction	Infraction - sanction	Infraction - warning	No infraction	
AU	3	3	2	3	2	13
2018		1		1	1	3
2019	3	2	2	2	1	10
NZ	3	5	5	5	3	21
2018	1	3	3	1	1	9
2019	2	2	2	4	2	12
JP	2	3	3	5	2	15
2018	1	2	2		1	6
2019	1	1	1	5	1	9
Grand Total	8	11	10	13	7	49

People who work with MS-Excel pivot tables regularly and who are familiar with the Compliance Case File System will probably find this table relatively easy to interpret. For example:

- o For 2019, there are 3 cases which Australia has been notified of but for which the investigation is incomplete; and
- o For 2019, there are 4 cases which New Zealand has been notified of and for which a warning resulted.

But, the meaning of the data presented in these tables may not be clear to people who are less familiar with pivot tables or the Compliance Case File System. There are several options which might present the same data in a way that makes it easier to interpret. An example of a table which presents the same data in a different format is shown below. This example uses "Classic pivot table format" [14], has sub-totals removed, has expand / contract buttons[15] removed, and has the columns centred. It would be worth checking whether CCMs find aggregated summary tables presented in this format easier to understand.

Count of cases by CCM responsible, year and status

		Open	Closed - No infraction	Closed - Infraction - no sanction	Closed - Infraction - warning	Closed - Infraction - sanction	Grand Total
AU	2018		1	1	1		3
	2019	3	1	2	2	2	10
JP	2018	1	1	2		2	6
	2019	1	1	1	5	1	9
NZ	2018	1	1	3	1	3	9
	2019	2	2	2	4	2	12
Grand Total		8	7	11	13	10	49

> **ACTION** - The Secretariat produce an alternative format of the aggregated summary tables in which (i) the tables are in "Classic" pivot table format, and (ii) the sub-totals and expand / contract buttons are removed, and (iii) the columns are centred; then survey CCMs on whether this alternative format is better than the current format. If CCMs prefer this alternative, then enhance the CCFS to implement it.

This action would cost less than $5K to implement.

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[14] Classic format was the default format prior to Excel 2007.
[15] In printed documents these are meaningless

The subject of the aggregated summary tables

It is also possible that the main problem with the current aggregated summary tables is not that they are poorly formatted, but that the data that they contain does not address the questions that CCMs have. The *Summary Tables of Flag CCM Responses* report contained many aggregated summary tables, but each of these tables addressed the same question for a different subset of the cases contained in the CCFS (e.g. the Article 25-2 subset, the FAD closures in year XYZ subset, etc). The one question addressed was - *For each CCM responsible, how many cases had each Status / Outcome[16]?* If this wasn't the question that a CCM wanted answered, then reformatting the aggregated summary tables would not help that CCM.

It is further recognised that in 2020, in CMM 2019-06 *Conservation and Management Measure for the Compliance Monitoring Scheme* the Secretariat has given specific instructions on what the aggregated summary tables generated from the CCFS should comprise. This provides aggregated summary tables by topic and by CCM responsible, and a set of aggregated summary tables combining all lists for each CCM responsible. The 2020 experience from TCCs use of the expanded set of aggregated summary tables from the CCFS could be useful to reflect on in considering how the approach to developing the aggregated summary tables could be further improved.

> **ACTION** - The WCPFC review, and provide guidance to the Secretariat on, the range of questions that they want aggregated summary tables (as contained in the Summary Tables of Flag CCM Responses document produced each year at TCC) to address.

Static tables vs dynamic tables

While printed documents containing aggregated summary tables of CCFS data provide a convenient common reference point around which discussions (e.g. at TCC) can be structured, tables presented in printed documents are inherently static and inflexible. While these static aggregated summary tables have a place within the WCPFC's operations, there may additionally be a need for dynamic online tables. This issue is addressed later in this review (possible enhancement 7 - Add graphing / table creation tools to the CCFS).

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[16] This is a simplification, as (1) in some tables the cases are broken down by both CCM responsible and year and CMM, and (2) case status is also included in the outcome data.

The way in which Status and Investigation Outcome are categorised

It is also possible that a major problem with the current aggregated summary tables is that the way that the status and outcome of cases is categorised is inadequate. Currently, the six types of case share a common set of possible Investigation Outcomes; but they do not share a common set of Statuses.

Type of case	Statuses used	Investigation outcomes used
Article 25-2 Compliance Cases	• CCM Notified • Closed • Draft	• No infraction • Infraction – no sanction • Infraction – warning • Infraction – sanction • Empty
FAD Sets Alleged Infringements	• Flag CCM Investigation Completed • Flag CCM Investigation in Progress • Flag CCM Notified • NOT for Flag CCM Circulation • Notification Cancelled	
Observer Obstruction		
Shark Catch Alleged Infringements		
ROP Pre-Notification Issues		
Cetaceans and Whale Shark		

It appears that the current Status and Investigation Outcome ontology[17] is trying to capture four concepts in two fields, specifically (1) is the case open or closed, and (2) who is working on it, and (3) what action is currently taking place, and (4) what was the outcome. It is not clear that the current Status / Outcome ontology is optimal. For example:

- Could the wording used be improved to enhance clarity?
- Would it be possible to develop a set of statuses that were common for all six types of case?
- Notification Cancelled is currently a Status, but should it be an Outcome?
- Could "Flag CCM Notified" and "Flag CCM Investigation in Progress" be merged into the concept of "Waiting on response from Flag CCM"?
- Is there a need to know about "Waiting on response from the Initiating CCM" or "Waiting on response from ROP provider"?

Reviewing the Status / Outcome ontology has the potential to improve the data which at least three of the proposed enhancements to the CCFS would use[18]. These enhancements could be implemented without such a review but might be more effective if the review had occurred.

> **ACTION** - The WCPFC review, and provide guidance to the Secretariat on, the case Status / Outcome ontology used in the CCFS.

If the WCPFC does decide to review its Status / Outcome ontology, then it should consider:

- The information requirements specified in Conservation and Management Measures
- Whether there are additional information needs that the current ontology is not meeting
- How many fields should the revised Status / Outcome ontology be stored in
- Could the historical data in the CCFS database be [automatically] converted to the new ontology?

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[17] In Information Science, an ontology is - *a way of showing the properties of a subject area and how they are related, by defining a set of concepts and categories that represent the subject*.
[18] Allow the CCM to browse a single list containing all cases, Enhance the aggregated summary tables produced by the CCFS, and Add graphing / table creation tools to the CCFS.

The level of aggregation at which Article 25-2 alleged infringements are recorded

The survey did not include a specific question about the level of aggregation at which Article 25-2 alleged infringements are recorded within the CCFS, but one CCM raised this issue in response to question 31 (are there other upgrades to the CCFS that your CCM wants to propose). The CCM commented – *We note that, like the CMS, the CMMs are broken down by paragraph. At the moment, when we upload the results of a boarding report in Art. 25-2 system, there is only a text box to provide comment, as well as an ability to attach documents (e.g. emails and boarding reports). It is often the case that one CMM has multiple infringements against different paragraphs. [CCM name] had three 2018 cases closed right before TCC 2019, with not much explanation from the Secretariat. A response was provided on one infringement only, when there were several. Is there a way the CCFS can better reflect non-compliances from HSBIs separately in a manner similar to the CMS?*

Article 25-2 Compliance cases usually result from High Seas Boarding / Inspection (HSBI), port inspection, aerial surveillance or Vessel Monitoring System incidents. Using HSBI as an example; currently, all the alleged infringements that originate from a single HSBI are considered to be a single "case". The boarding / inspection (and not the individual alleged infringement) receives comments and supporting documents, a status, and ultimately an investigation outcome. But each alleged infringement that originates from ROP data is considered to be a single "case"; and the alleged infringement receives comments and supporting documents, a status, and ultimately an investigation outcome. Put simply:

- For ROP data – one CCFS "case" equals one alleged infringement, but
- For Article 25-2 data - one CCFS "case" equals one or more alleged infringements.

Currently, it could be reasonably argued that any count of the number alleged infringements in the CCFS is meaningless if that count includes both ROP cases and Article 25-2 cases, and that it is only when ROP cases are considered separately from Article 25-2 cases that counts become meaningful. This already constrains how CCFS data can be presented in aggregated summary tables and it will ultimately constrain how CCFS data can be presented in online graphing / table creation tools. It may be that the current level of aggregation for Article 25-2 alleged infringements is appropriate for the WCPFC, but now would be a good time to review and verify this.

> **ACTION** - The WCPFC review, and provide guidance to the Secretariat on, the level of aggregation at which Article 25-2 alleged infringements are recorded in the CCFS.

Possible enhancement 5 - Allow the CCM to bulk upload comments, on single cases, that they had drafted offline

Seven CCMs rated enhancing the CCFS to allow the *bulk upload of comments on single cases* as high priority, and a further six rated this as medium priority.

Allow your CCM to bulk upload comments, on single cases, that you had drafted offline

Answered: 20   Skipped: 1
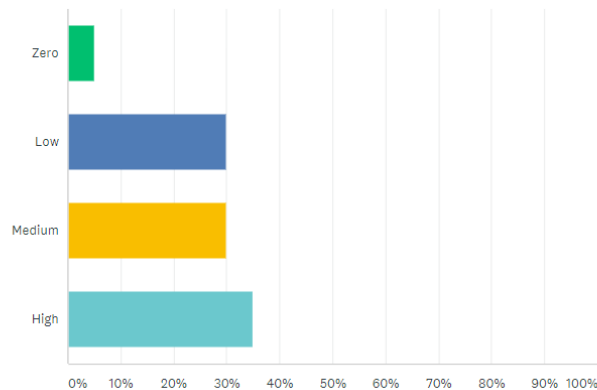
One CCM made *bulk upload comments* the only high priority enhancement that they requested. No additional comments, relating to *bulk upload comments*, were received from CCMs in response to question 31 (are there other upgrades to the CCFS that your CCM wants to propose) of the survey.

This is [by far] the most difficult possible enhancement proposed for the CCFS. The issues identified to-date include:

- Within a bulk upload of comments, how will the CCM identify which case each comment relates to? Presumably, the CCM will need to use the same Case ID as the CCFS uses internally. Will the CCM download a list of these (e.g. using Export to Excel) or will the CCM manually enter each Case ID?
- What validation will the CCFS do on bulk comments submitted by a CCM? Presumably, as a minimum, the CCFS will need to check that the Case ID is valid for an open case.
- What authentication will the CCFS carry out to ensure that the CCM is entitled to provide a comment for case XYZ?
- Is it only bulk comments that are required, or do CCMs also want to be able to bulk attach supporting documents?
- What mechanism do CCMs expect to use to capture bulk comments offline? Will the CCM enter these into a file (e.g. CSV or Excel) with a format that meets a pre-agreed WCPFC standard, or will the CCM develop their own offline bulk comment editing software that can transmit comments in a format that meets a pre-agreed WCPFC standard, or will the Secretariat need to provide offline bulk comment editing software that the CCM can load onto their computers?
- Is the requirement that bulk comments be reflected in the CCFS in real-time, or would it be adequate that the CCFS process bulk comments once a day (e.g. at midnight each day)?
- What is the requirement regarding the feedback that should be provided to the submitting CCM to indicate whether each of their bulk comments was successfully uploaded or not?

It is likely that more issues would be identified as work into this possible enhancement progressed. Because of the above, it is easy to conceive of a scenario in which the WCPFC spent over $50K to implement a fully-fledged bulk upload comments facility. There may be an option, based on some functionality which already exists within the RFV, which would provide a very basic bulk upload comments facility for a much lower cost; but currently it is unclear whether such an option would meet CCM expectations.

> **ACTIONS** - The Secretariat:
>
> - Undertake further consultation to clarify CCM expectations on issues such as (i) does bulk upload include documents, and (ii) what mechanism do CCMs expect to use to capture bulk comments offline, and (iii) must uploaded comments be reflected in the CCFS in real-time, and (iv) what feedback should be provided to the submitting CCM to indicate whether each of their bulk comments was successfully uploaded or not.
> - Investigate realistic options to allow CCMs to bulk upload comments, on single cases, that they have drafted offline.
> - If possible - produce a proof of concept of a tool which would allow CCMs to bulk upload comments, on single cases, that they have drafted offline.

These actions would cost approximately $10K to implement.

Possible enhancement 6 - Make all the functions on the CCFS work on the most common internet browsers

Six CCMs rated enhancing the CCFS to *make all the functions on the CCFS work on the most common internet browsers* as high priority, and a further seven rated this as medium priority.

Make all of the functions on the CCFS work on the most common internet browsers

Answered: 19   Skipped: 2
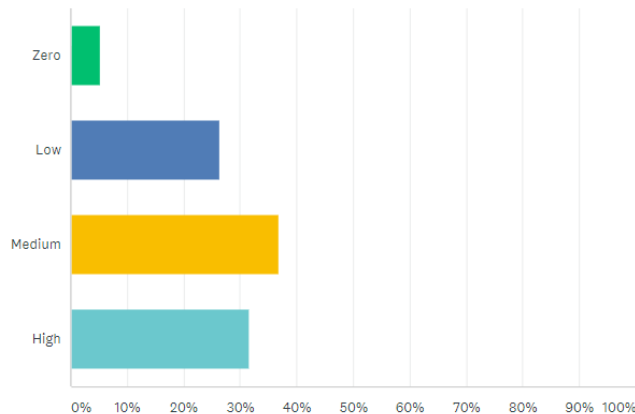
The following additional comments were received from CCMs in response to question 31 (are there other upgrades to the CCFS that your CCM wants to propose) of the survey:

- *For users whose computers do not install Microsoft SharePoint software, it is hard to export/ download all cases to excel spreadsheet format.*
- *As outlined above (see Q.5), we would like to use the current CCFS to export all cases, however this is currently not possible due to system incompatibility. This may be a function of our IT security restrictions, or incompatible programs to export to. It would be useful to know if this issue is shared by other CCMs and what potential solutions there are.*

As part of this review, the CCFS was tested on the world's five most common desktop[19] internet browsers; these being Chrome, Safari, Firefox, Edge and Internet Explorer. The exact percentage of market share that each of these browsers has is disputed; but, at between 65% and 80%, Chrome has the largest share. Together, these five browsers account for approximately 95% of desktop browser usage. Twenty six commonly used features of the CCFS were tested on each of these browsers.

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[19] Mobile browsers were excluded, as it was assumed that few people would use the CCFS from a mobile device.

Results of browser function tests

Feature	Browser				
	Chrome	Safari	Firefox	Edge	Internet Explorer
Navigate to the FAD Sets screen	✓	✓	✓	✓	✓
On the FAD Sets screen:					
- View the list of cases	✓	✓	✓	✓	✓
- Expand / contract list	✓	✓	✓	✓	✓
- Group list of cases by Observer Provider	✓	✓	✓	✓	✓
- Sort list of cases by Tuna Caught	✓	✓	✓	✓	✓
- Filter list of cases by Flag CCM Notified	✓	✓	✓	✓	✓
- Search list of cases for "coastal"	✓	✓	✓	✓	✓
- Change list of cases to Print View	✓	✓	✓	✓	✓
- Export list of cases to Excel	✓[20]	✗	✓	✓	✓
- Open menu then view Version History	✓	✓	✓	✓	✓
- Click on the CMM reference link	✓	✓	✓	✓	✓
- Click on a Case ID to open that case	✓	✓	✓	✓	✓
- Click on the Trip ID link	✓	✓	✓	✓	✓
On the case screen[21]:					
- View the case details & comments	✓	✓	✓	✓	✓
- Click on the CMM reference link	✗	✗	✗	✗	✗
- Click on the Trip ID link	✗	✗	✗	✗	✗
- Click on Version History	✓	✓	✓	✓	✓
- Add a new comment	✓	Not tested[22]	✓	✓	✓
- Add an attachment	✓	Not tested	✓	✓	✓
- Click on Close	✓	✓	✓	✓	✓
- Click on top-right "X"	✓	✓	✓	✓	✓
On the Vessel Trip screen:					
- View the trip details	✓	✓	✓	✓	✓
- Click on the Vessel link	✗	✗	✗	✗	✗
- Click on Close	✓	✓	✓	✓	✓
- Click on top-right "X"	✓	✓	✓	✓	✓
In general:					
- Navigate using the browsers Back button	✓	✓	✓	✓	✓

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[20] When tested in May 2020, Export to Excel did not work on Chrome, but when re-tested in June 2020 Export to Excel did work on Chrome. What changed between May and June is unknown.

[21] "Alert me" was not tested, as it is known that this does not work for users outside the WCPFC.

[22] Entering data cannot be safely tested on the production CCFS. To test data entry, access to a test version of the CCFS was required. Gaining access to the test version of the CCFS from a remote location was a non-trivial undertaking and could not be achieved using Safari.

In general, the twenty six CCFS features tested worked consistently and correctly across the world's five most common desktop internet browsers. The exceptions to this were:

- The CMM reference link, on the individual case screen, did not work on any of the browsers. In all cases a *Web Page Not Found* or *404 Not Found* error was returned.
- The Trip ID link, on the individual case screen, did not work on any of the browsers. In all cases a *Web Page Not Found* or *404 Not Found* error was returned.
- The Vessel link, on the individual case screen, did not work on any of the browsers. In all cases a *Web Page Not Found* or *404 Not Found* error was returned.
- Export list of cases to Excel – did not work on Safari. It did not work on Chrome in May 2020 but did work on Chrome when retested in June 2020. It did work on Firefox, Edge and Internet Explorer.
- Even when it did work, Export to Excel consistently asked for the user's password four times.

Links on pop-up case screens not working

The three issues with the links not working is a bug and not a browser compatibility problem. The same issue exists regardless of whether the CCFS is accessed from inside or outside of the Secretariat. The Secretariat has been informed of this bug and is working to resolve it as part of their routine bug-fixing processes.

The need to download and install SharePoint

It is a misconception that the CCFS Export to Excel function requires the user to download and install SharePoint. What is required is that the user's browser be compatible with SharePoint's Export to Excel function.

Export to Excel not working on Safari

In June 2020, the Export to Excel feature was working on four of the five browsers tested. The exception was Safari. Safari is the default browser for Apple Mac computers and, out-of-the-box, Safari is not compatible with SharePoint's Export-to-Excel function. As major business rivals, it is unlikely that Apple and Microsoft will put much effort into making Safari compatible with SharePoint's Export to Excel function. Currently, it is not known whether a work around for this issue exists. Even if a work around did currently exist, there is no guarantee that it would continue to work after Microsoft and Apple update their respective products. The Secretariat advises that it is probably impractical to get the CCFS Export to Excel function to work on Safari.

Export to Excel asking for password four times

Even on Chrome, Firefox, Edge and Internet Explorer, the user was prompted to correctly enter their password four times before the excel download started. This repetition of asking for the same password will cause many users to think that Export to Excel is not working. If the user is persistent enough to correctly enter their password four times, then the Export to Excel feature works on Chrome, Firefox, Edge and Internet Explorer. This was tested using very recent versions of these browsers and Excel 2016. Once the user has correctly entered their password four times, they can continue to use Export to Excel without being asked to re-enter their password until either (i) they close their browser, or (ii) their CCFS session times out, or (iii) they close Excel. The Secretariat advises that it is probably impractical to prevent Export to Excel asking for the user's password four times.

Summary of browser incompatibility issues

There is little more that can practically be done to enhance the CCFS's compatibility with common internet browsers. The few issues that were identified were either:

- General bugs (and not browser compatibility issues); or
- User misconceptions; or
- Deep rooted technical constraints.

It appears that what would be most beneficial is enhanced communication, between the Secretariat and CCMs, regarding which web browsers should (and at the time of writing do) work well with the CCFS.

> **ACTION** - The Secretariat enhance communication with CCMs regarding (i) which internet browsers work best with the CCFS and (ii) the known limitations of the CCFS Export to Excel function.

There would be merit in the WCPFC formally identifying a list of browsers (for example - Chrome, Firefox, and Edge) that all its online systems would be designed and tested to work on. Note that:

- each additional browser required would increase the IT development and maintenance overhead of the Secretariat; and
- versions of browsers would remain an issue[23].

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[23] Presumably the Secretariat would design and test for the most recent version of each browser.

Possible enhancement 7 - Add graphing / table creation tools to the CCFS

In addition to asking about printed aggregated summary tables, the survey also asked CCMs for their opinions on upgrading the CCFS to include online graphing / table creation tools.

Add graphing / table creation tools to the CCFS, so that your CCM can independently analyse patterns / trends across the detailed case data that your CCM is entitled to view under paragraph 12 of CMM 2019-06

Answered: 20   Skipped: 1
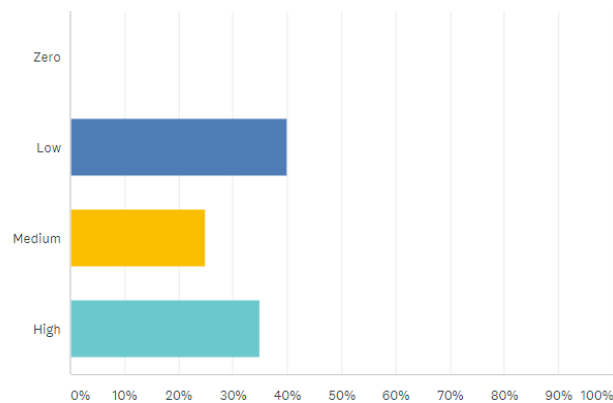
No additional comments, about online graphing / table creation tools, were received from CCMs in response to question 31 (are there other upgrades to the CCFS that your CCM wants to propose) of the survey. The survey questions on aggregated summary tables and graphing / table creation tools are closely related. Of the twenty survey responses to these questions:

- In 11 responses the CCM assigned the same priority to enhancing aggregated summary tables that they assigned to enhancing graphing / table creation tools
- In six responses the CCM assigned a higher priority to enhancing aggregated summary tables than they assigned to enhancing graphing / table creation tools
- In responses cases the CCM assigned a lower priority to enhancing aggregated summary tables than they assigned to enhancing graphing / table creation tools.

In eight of the nine cases in which a CCM assigned a different priority to these two enhancements, the CCM assigned only a one step difference (for example: high vs medium, or medium vs low). Given the printed document focus that exists for many WCPFCs processes, including TCC; it is unlikely that implementing online graphing / table creation tools, but not enhancing the aggregated summary tables, would satisfy the WCPFC's needs. However, a question remains over whether the WCPFC would still need online graphing / table creation tools if the (printed) aggregated summary tables were enhanced.

If an online graphing / table creation tools is required, then this should not be difficult to implement. The CCFS data is stored in an industry standard SQL database. There are many off-the-shelf software products that allow for the online creation of graphs / tables from SQL data. These products, when combined with CCFS data, would allow CCMs to perform and present their own analyses of CCFS data. The same product could subsequently be re-used to provide an online graph / table creation capacity for other types of WCPFC data. CCFS data itself is not highly suited to graphing, as the only CCFS data that is quantitative is counts of the number of cases. However, if CCM users are willing to accept this limitation then the CCFS presents the WCPFC with a good opportunity to create a proof

of concept online graph / table creation tool; and it is highly likely that the functionality provided by such a tool will to be required for other types of WCPFC data in the near future.

ACTION - The Secretariat implement a limited proof of concept online graph / table creation tool, providing CCM users with access to a small range of graphs / tables which interrogate the CCFS data that all CCMs are entitled to view. This tool should be implemented using software that can subsequently be re-used to provide similar functionality for other types of WCPFC data.
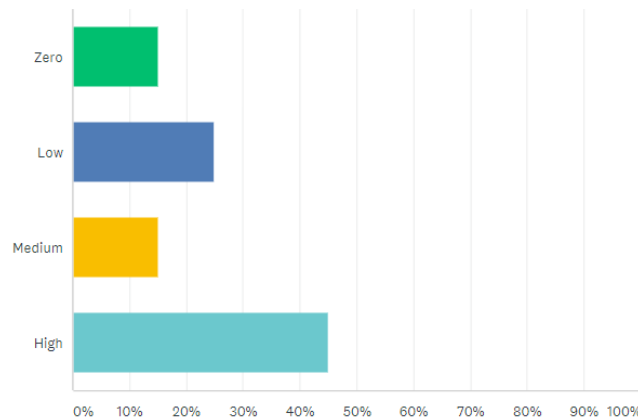
This action would cost approximately $10K to implement.

Possible enhancement 8 - Increase the training options available for CCFS users

Nine CCMs identified increasing the CCFS training options available to CCMs as being of high priority.

Increase the training options available for CCFS users.

Answered: 20   Skipped: 1

The following additional comments were received from CCMs in response to question 31 (are there other upgrades to the CCFS that your CCM wants to propose) of the survey:

- *Training is very important to members on any new development of the system to enable members especially small islands states to use and apply the system effectively.*

As noted earlier, the CCFS is an inherently simple system which currently has a cluttered interface. If the interface was improved:

- then it would be reasonable to assume that the need for training would be reduced, but not entirely eliminated; and
- it would be difficult to imagine a reasonable scenario in which a CCFS training session would take more than two hours.

CCFS users are widely geographically distributed. Unless these users occasionally gather in one place for some other reason, then options to provide in-person training will always be costly. Therefore, online or downloadable training are obvious options which should be considered.

ACTION - The Secretariat offer CCFS training to CCM users, either in the form of (i) training on the margins of other WCPFC meetings, or (ii) an online course, or (iii) a downloadable training video (or videos).

This action would cost less than $5K to implement.

An alternative would be for the WCPFC to offer once a year training covering all its systems used by CCMs, but this would be a large undertaking and considerably more expensive.

Possible enhancement 9 - Allow the CCM to create draft comments for a single case

Allow your CCM to create draft comments for a single case. A draft comment would only be visible to your CCM, and not the Secretariat or other CCMs. Once a draft comment had been through your CCM's internal review process, you could then publish it for wider visibility

Answered: 20   Skipped: 1
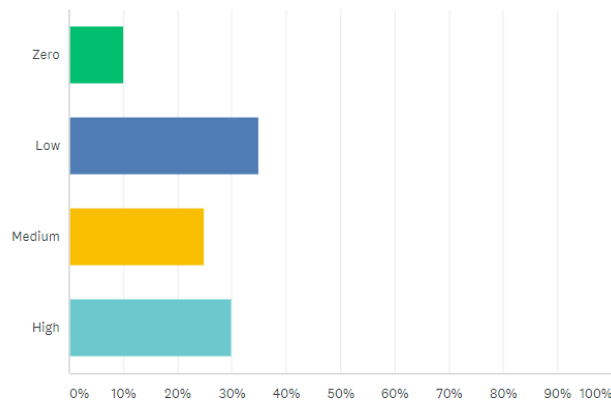
The following additional comments were received from CCMs in response to question 31 (are there other upgrades to the CCFS that your CCM wants to propose) of the survey:

- *The current CCFS allows CCMs to enter information and updates for each individual case - however, as the system is set up now, that information cannot be edited once it is submitted. It would be useful if CCMs had the ability to undo or edit information once it has been submitted, in case of errors, misspellings, etc.*
- *Saving option as you type.*

The CCFS tracks version history. While most users of the CCFS would probably be happy for other users to be able to correct misspellings and other non-material errors without these corrections being recorded as a new version, far fewer users would be happy for other users to make material changes without these being recorded in the CCFS's version history. Given that the automated version history system has no way of telling material changes from non-material changes, to implement such a system would require a manual review, probably by the Secretariat, of all changes. This could be both a lot of extra work and highly subjective.

A partial solution to the issue outlined above would be to introduce the concept of a "draft comment" into the CCFS. Draft comments would not be visible to users outside of the drafting user's organisation and would not be recorded by the CCFS version control system. Equally, a draft comment could not be considered to a response to a case, as no other CCM would be able to see it. Once a draft comment had been finalised (errors / misspelling corrected, internal peer review completed) by the CCM, it could be "approved" to become a standard comment, at which point it would be recorded in the CCFS's Version History. Out-of-the-box SharePoint provides for a Draft / Approval process, but (i) this would require that multiple additional roles be created for CCMs (which would have an administrative overhead for the Secretariat), and (ii) if used this would need to apply to all CCMs, and (iii) SharePoint's out-of-the-box process is somewhat clumsy. Alternatively, the Secretariat could create its own custom Draft / Approval process, but this would be costly.

Given its relatively low priority ranking by CCMs, it is not recommended that a *draft comment*s capability be added to the CCFS in 2020.

Possible enhancement 10 - Allow the CCM to export (e.g. to PDF) the details of a single case

Allow your CCM to export (e.g. to PDF) the details of a single case

Answered: 20   Skipped: 1
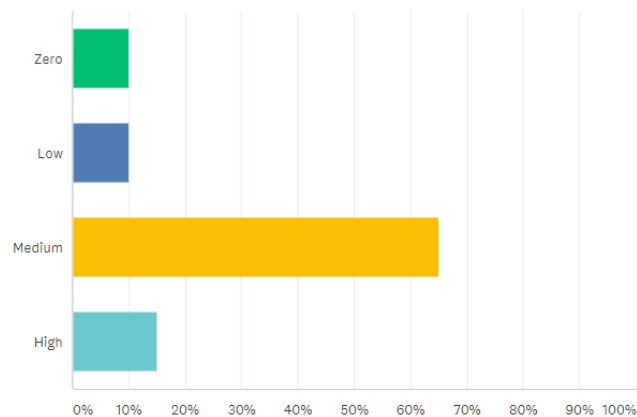
No additional comments, about export (e.g. to PDF) the details of a single case, were received from CCMs in response to question 31 (are there other upgrades to the CCFS that your CCM wants to propose) of the survey.

By default, the current CCFS allows the user to print a list of cases but does not allow the user to elegantly print the details of a single case. While it is technically possible to print a single case, using the default option the case occupies only a small portion of the printed page with the rest of the page being consumed by the underlying list of cases. There is a simple work around for this constraint, which also allows the user to export the details of a single case to a PDF. It is likely that many CCMs are not aware that this work around exists.

Given its relatively low priority ranking by CCMs, it is not recommended that an *export to PDF* capability be added to the CCFS in 2021. However, the work around that is already available should be documented in the CCFS user manual and described in CCFS training.

Possible enhancement 11 - Improve the Quick Guide (CCFS user documentation)

Improve the Quick Guide (CCFS user documentation)

Answered: 20   Skipped: 1
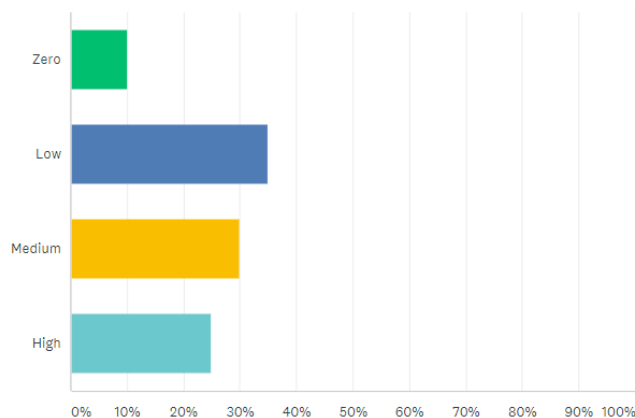
The following additional comments were received from CCMs in response to question 31 (are there other upgrades to the CCFS that your CCM wants to propose) of the survey:

- *Add a link to the user guide in the same section*
- *As outlined above (see Q.9), concerning the utility of the CCFS quick guide (user documentation), this is useful when cases are open. However, we suggest placing the quick guide on the main page of the 25-2 case file system, so that it is more easily found whilst working in the system. Alternatively, place it in the 'Document Libraries' tab.*
- *It would be so much easier for us if the Secretariat provides a manual regarding the implementation of CCFS, because we find it very difficult right now to find the CCFS pages, let alone trying to use it correctly.*

The current CCFS does not include a Help button but the addition of this button, linking to page specific help, has been recommended in an earlier section.

A guide for the CCFS was circulated to CCMs in March 2020. This guide is well written and is structured around tasks that CCMs might want to undertake using the CCFS. The March 2020 CCFS guide was not found on the WCPFC Intranet. Multiple earlier versions of CCFS guides were found among three folders. None of these guides included "CCFS" in the title[24]. A search of the WCPFC intranet for "CCFS" did not detect any of the guides.

> **ACTION** - The Secretariat improve and update the CCFS user guide to cover all the features present in the enhanced CCFS, and additionally improve how this is named and stored on the WCPFC intranet.

This action would cost less than $5K to implement.

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[24] The document names included either "dCMR" or "Compliance Case File System"

Possible enhancement 12 - Allow a CCM to assign responsibility for a single case to an individual within the CCM

Allow your CCM to assign responsibility for a single case to an individual within your CCM. This would not be visible to other CCMs. This might be a simple label attached to each case, that you could then use to filter and sort lists of cases

Answered: 20   Skipped: 1
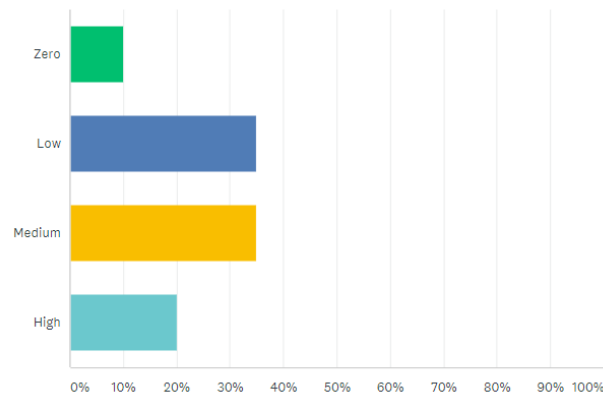
No additional comments, about assigning responsibility for a single case to an individual within the CCM, were received from CCMs in response to question 31 (are there other upgrades to the CCFS that your CCM wants to propose) of the survey.

As noted in an earlier section[25] the WCPFC does not currently have a system to manage contact details, roles and preferences at the level of the individual CCM user. Instead, CCMs are assigned two organisation-wide logon IDs (CMR.xx and RFV.xx). This constrains any upgrade to the CCFS that would comprehensively implement allowing CCMs to assign responsibility for cases to specific individuals within their organisation. While there are ways that this could be achieved, it is noted that CCMs identified this enhancement as being the lowest priority for them.

Given its relatively low priority ranking by CCMs, it is not recommended that an *assign responsibility for a single case to an individual* capability be added to the CCFS in 2020.

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[25] Possible enhancement 1 – Automatically notify people within the CCM when a single case is created or updated

Appendix 1 – The terms of reference for this review

REVIEW OF ONLINE COMPLIANCE CASE FILE SYSTEM AND ASSOCIATED INFORMATION PRODUCTS PROVIDED FOR CCM USE

INTRODUCTION

The WCPFC operates the online Compliance Case File System (CCFS). Commission Members, Cooperating Non-Members, and Participating Territories (CCMs) can access this system in accordance with conservation and management measures or decisions adopted by the Commission. At the 15th Regular Session of the Technical and Compliance Committee (TCC), held 25 Sep 2019 to 1 Oct 2019 in the Federated States of Micronesia; some CCMs expressed Concern that the CCFS system was not adequately meeting their needs.

PURPOSE

The purpose of this contract is to investigate the issues raised at TCC15 and where appropriate provide recommendations on options for better meeting CCM needs.

TASKS

The contractor will:

1. Familiarize themselves with the CCFS that is currently available to CCMs. This will involve discussions with key WCPFC Secretariat staff members.
2. Investigate and document constraints related to the system currently available to CCMs. This would benefit from discussions with key WCPFC Secretariat staff members.
3. Review any written comments submitted by CCMs that add detail to their TCC15 comments.
4. With the support of key WCPFC Secretariat staff, develop a survey for circulation to CCMs. The purpose of this survey will be to identify broad themes regarding how well the current CCFS meets CCM's needs, and CCMs perceptions of the priority of any improvements that they are requesting. The survey will be circulated widely to CCMs.
5. Analyse and document the results of the survey.
6. Given the results of the survey and in consultation with key WCPFC Secretariat staff, prioritise the key issues that need to be addressed within the remaining hours of this contract.
7. Hold discussions with key CCMs, to elaborate on the broad themes identified by the survey. This is expected to include (at least) a meeting with representatives of New Zealand, Australia and a PNA Member for the purpose of documenting their concerns expressed at TCC 15 regarding the current information products. The Secretariat will confirm in early 2020, whether other opportunities to obtain input from interested CCMs such as to participate in discussions remotely via zoom (or similar) and/or participation by the consultant at the FFA MCS Working Group meeting in late March or another regional meeting in 2020 will be necessary.
8. Analyse the extent to which the current CCFS meets CCM needs.
9. Where appropriate, enhance CCMs knowledge of the CCFS already available to them.
10. Where requested, assist WCPFC with the evaluation of practical options for improving the CCFS to better meet CCM needs.
11. Present an initial draft of the review to WCPFC Secretariat staff for their comments.

OUTPUTS

1. A document describing: the current CCFS, the enhancements to the CCFS required by CCMs and an indication of each CCMs perception of their relative priority, the gap between the status quo and needs, documentation of constraints, and practical options for filling the gaps (specifically identifying low- hanging fruit).
2. One or two presentations to WCPFC staff on the findings of the review.
3. The consultant may be requested by the Secretariat to provide a presentation to TCC16 on the findings of the review.

Appendix 2 – The questions asked in the March 2020 survey of CCMs

1. Which CCM is submitting this response?
2. What email address, or list of email addresses, should the WCPFC Secretariat contact if we have any follow-up questions?
3. How often does your CCM use the current CCFS to search for a single case?
4. How often does your CCM use the current CCFS to browse all cases to monitor their status?
5. How often does your CCM use the current CCFS to export / download all cases?
6. How often does your CCM use the current CCFS to view the details of a single case?
7. How often does your CCM use the current CCFS to add a comment to a single case?
8. How often does your CCM use the aggregated summary tables produced by the current CCFS?
9. How often does your CCM read the quick guide (user documentation) available for the current CCFS?
10. Using the current CCFS, how easy is it for your CCM to logon?
11. Using the current CCFS, how easy is it for your CCM to navigate around the CCFS?
12. Using the current CCFS, how easy is it for your CCM to search for a single case?
13. Using the current CCFS, how easy is it for your CCM to browse all cases to monitor their status?
14. Using the current CCFS, how easy is it for your CCM to export / download all cases?
15. Using the current CCFS, how easy is it for your CCM to view the details of a single case?
16. Using the current CCFS, how easy is it for your CCM to add a comment to a single case?
17. Using the aggregated summary tables produced by the current CCFS, how easy is it for your CCM to identify potential anomalies in the implementation of obligations by a CCM?
18. Using the aggregated summary tables produced by the current CCFS, how easy is it for your CCM to review patterns / trends in the implementation of obligations covered by the CCFS?

Below is a list of recently proposed upgrades to the CCFS. What priority would your CCM assign to each of these? Do not use any priority category more than four times. For example – do not list more than four High Priority proposed upgrades.

19. Make the CCFS easier to use.
20. Make all of the functions on the CCFS work on the most common internet browsers.
21. Automatically notify designated people within your CCM when a single case is created or updated.
22. Allow your CCM to assign responsibility for a single case to an individual within your CCM. This would not be visible to other CCMs. This might be a simple label attached to each case, that you could then use to filter and sort lists of cases.
23. Allow your CCM to create draft comments for a single case. A draft comment would only be visible to your CCM, and not the Secretariat or other CCMs. Once a draft comment had been through your CCM's internal review process, you could then publish it for wider visibility.
24. Allow your CCM to bulk upload comments, on single cases, that you had drafted offline.
25. Enhance the aggregated summary tables produced by the CCFS, so that your CCM can independently analyse patterns / trends across the full range of summary data held in the CCFS.
26. Add graphing / table creation tools to the CCFS, so that your CCM can independently analyse patterns / trends across the detailed case data that your CCM is entitled to view under paragraph 12 of CMM 2019-06.

27. Allow your CCM to browse a single list containing all cases. This single list would combine: Article 25-2, FAD sets, Observer Obstruction, Shark Catch, ROP Pre-Notification and Cetacean Interaction cases.
28. Allow your CCM to export (e.g. to PDF) the details of a single case.
29. Improve the Quick Guide (CCFS user documentation).
30. Increase the training options available for CCFS users.

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31. If there are other upgrades to the CCFS that your CCM wants to propose, then add them below.
32. If there are any supplementary comments that your CCM wishes to make, with regard to your responses above or the current project to investigate upgrading the CCFS, then add them below.

Appendix 3 - CCM comments not covered elsewhere in this document

Question 31 asked CCMs - *are there other upgrades to the CCFS that your CCM wants to propose*. The responses to this question included several suggestions that did not fit easily within any of the topics discussed previously. These are documented below.

CCM Comment	Reviewer's Response
This CCM believes that it would be much convenient if one could export all compliance cases at once at a certain point in time, in an editable format such as Excel or Word, preferably.	It would be possible to build the tool that you request, but this would require changes to the structure of the database that supports the CCFS and would cost between $10K and $20K. Additionally, because different information is collected for each of the six different types of case, a single spreadsheet containing "all relevant associated information" for all six types of case combined would (1) contain a very large number of columns and (2) contain a lot of empty cells. One approach would be to see how the enhancements which are recommended in this review benefit your use of the CCFS, then consider re-raising your issue at a later date.
Right now we can download a list of all cases, but all of the specific details of each case are not included in the exported list. The system could be greatly improved if CCMs could export a single list or spreadsheet containing all cases and all relevant associated information (including specific details) for each case.	

[CCM name] suggest for CCMs to explore available options to integrate the CCFS with national or regional systems so it can be a one stop shop for all reported cases. This may minimise the duplicative effort to work on and investigate a similar case when reported and registered on national system and again notified through the CCFS.	Consolidation of systems is a complex issue which would best be considered as part of a five or ten year strategic plan for WCPFC data systems. One approach would be for the WCPFC to move toward a bespoke systems development methodology in which: a) the architecture of systems is highly modular; and b) at the lowest practical level[26], those modules exchange data and data processing services via well-defined Application Programming Interfaces (APIs); and c) the existence of modules is opaque to users (the user would not realise if they had crossed from using one module to using another); and d) those APIs can also be utilised by authorised systems external to the Secretariat; and e) reference data[27] is common to all relevant systems. This approach: • Would require the documentation of standards for the provision of data and data processing services; and • Would require the documentation of standards for the appearance and function of the user interfaces; and • Most importantly - would pre-position the WCPFC for an environment in which greater sharing of data resources occurred between it and other national, regional and international organisations.
Data/information related to compliance is provided through both CCM portal page of the website and CCFS. Using only one platform, to the extent possible, might be more desirable.	
	Such an approach is inherently appealing in an RFMO context because it effectively "federates" data and data services, making the structure of these reflect the nature of the organisation. But, to gain the maximum benefit from such an approach CCMs would also need to modify their systems to be both consumers and producers of fisheries data micro-services.

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[26] There would always be decisions regarding the granularity at which modules are defined. For example, would the CCFS be one module, or would the CCFS be sub-divided into several modules, or would the CCFS plus Compliance Monitoring Scheme together constitute one module?

[27] Data that define the set of permissible values to be used in other data fields (e.g. species codes)

For compliance case, need two sides, who raise the case what to see the result, who have alleged infringement need to investigate, and put the result on CCFS. CCFS should allow two sides to communicate, in timely manner or live chat, for the investigate result and progress through this platform. The CCFS should be a useful tool for communication and share the view, investigate progress and result by this system in the timely manner.	Except for live chat, your requests should be addressed by the enhancements recommended in this review.
It may also be beneficial to add some additional information for individual cases in the CCFS. For example, there have been discussions surrounding the difficulty in tracking whether and when requests for observer reports have been made for individual allegations included in the CCFS. It would be useful if there was some way to update the system to track observer report requests through the CCFS - to show whether and when an observer report was requested, received, etc. Or, more ideally, if requests for observer reports could be made directly through the CCFS, so that history could be easily accessible and verified.	Several of the enhancements proposed in this review will improve access to the information already stored in the CCFS. The wider issue of the range of information that is stored in the CCFS is best addressed within other WCPFC processes, for example: • the Conservation and Management Measure for the Compliance Monitoring Scheme, and • the TCC Working Group on Observer Reports.
Allow the relevant CCM (like who found alleged infringement) to see the result of investigation, provide the observer provider contact or could send to the observer provider by icon of CCFS, could receive feedback from observer CCM, and keep communication by two sides and Secretariat for the compliance case.	
Make all information relevant for a case available in the CCFS	

Appendix 4 – What is an API?

It is likely that in coming years the WCPFC will increasingly need to concern itself with APIs. "API" is the acronym for "Application Programming Interface". At its simplest, an API has two parts:

- An address at which a service will be provided; and
- A predefined standard for the provision of that service.

For the non-technician, the concept of an API is perhaps most easily introduced by the way of an analogy. Consider a home theatre system -


at the rear of the system is a set of plugs -

each of these plugs allows a sub-component to be connected to the system. In an API analogy, each plug is an API address. Additionally, there is an international standard for how information, in this case the electrical signal that operates the speakers, is transmitted via these plugs. Because this standard is widely followed by manufacturers, there are thousands of models of speakers that can be connected to these plugs and used in the home theatre system. The plugs and the standards for how speakers will respond to electrical signals are analogous to an API.

Switching back to information systems and using the WCPFC's high seas transhipment e-reporting system (TSER) as an example, if anyone[28] types https://e-reporting.wcpfc.int/jsonapi/tser_vessels_180.json into the address bar of an internet browser -
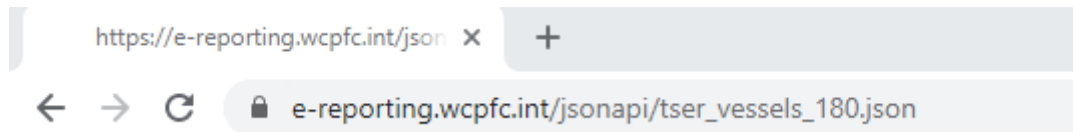
then the WCPFC's servers will send back a list of vessels authorised to tranship on the high seas, the first three of which are shown below.

{"meta":{"documentation":"https:\/\/www.wcpfc.int\/doc\/web-services.pdf","last_updated":"2018-04-30"},"jsonapi":{"version":"1.0","meta":{"links":{"self":{"href":"http:\/\/jsonapi.org\/format\/1.0\/"}}}},"data":[{"type":"vessels_180","id":"8a03e1c3-4674-412e-a608-c3013c752b4d","links":{"self":{"href":"https:\/\/e-reporting.wcpfc.int\/jsonapi\/tser_vessels_180.json\/8a03e1c3-4674-412e-a608-c3013c752b4d"}},"attributes":{"cursor":1,**"name":"3 BROTHERS","win":"WDJ2190","vid":"4120,"flag":"US","vty_type":"Longliner"**}},{"type":"vessels_180","id":"33f77b7f-9eb3-4b04-bc93-9af619629182","links":{"self":{"href":"https:\/\/e-reporting.wcpfc.int\/jsonapi\/tser_vessels_180.json\/33f77b7f-9eb3-4b04-bc93-9af619629182"}},"attributes":{"cursor":2,**"name":"88 INSUNG","win":"DTUV","vid":"5433,"flag":"KR","vty_type":"Longliner"**}},{"type":"vessels_180","id":"879441d5-d2b5-42a5-854a-5d5d557dbe74","links":{"self":{"href":"https:\/\/e-reporting.wcpfc.int\/jsonapi\/tser_vessels_180.json\/879441d5-d2b5-42a5-854a-5d5d557dbe74"}},"attributes":{"cursor":3,**"name":"ACONCAGUA BAY","win":"A8KY9","vid":"11453,"flag":"LR","vty_type":"Fish carrier"**}}

In this TSER example of an API:

- https://e-reporting.wcpfc.int/jsonapi/tser_vessels_180.json - is the address for the service. The address is static, therefore the TSER app always knows where it can get vessel data.
- The WCPFC list of vessels authorised to tranship on the high seas is returned in a format that complies with a predefined standard. This format is static, therefore the app always knows how to handle the data that it receives back from the API. In this example the standard only describes how the API returns data, but standards can also describe how an API receives data.

The output of the TSER vessel API is not pretty. This is because, as is generally the case, the TSER vessel API is primarily designed for programme-to-programme (and not programme-to-human) communication.

The TSER app gets its up-to-date list of vessels authorised to tranship on the high seas from the TSER vessel API, but any other programme (e.g. FIMS or CLS) could also use this service. APIs can be open or protected. Any computer programme (with access to the internet) can access an open API, and any authorised computer programme can access a protected API.

Many thousands (possibly millions) of APIs already exist on the internet. For example - there are lots of weather forecasting apps available, but their makers do not all employ big teams of weather forecasters. Instead, there are a handful of companies that do global weather forecasting who publish their forecasts on protected APIs. They then sell access to these APIs to companies that programme weather apps, who then sell their apps to consumers. The consumer never sees the API,

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[28] Try it, you can't do any harm

but behind the scenes it is providing the forecast data to the app, which then converts that data into pretty pictures of sun or rain that are displayed to the user.

Why are APIs important for Regional Fisheries Management Organisations?

APIs will become increasingly important to RFMOs because they provide a practical mechanism by which the de-centralised management of fisheries data and data processing services could be implemented. It is possible to conceive of a future in which the national, regional and international organisations concerned with the management of fisheries, published data[29] and data processing[30] micro-services via APIs. These organisations would then build small systems that consolidated, to meet specific needs, relevant subsets of the micro-services provided by themselves and others. For example, the WCPFC might build a vessel register viewing portal (with or without an underlying central database) that consolidated the vessel data published by national fisheries management organisations on their vessel APIs. Vessel data obtained from the same APIs might also be used as the reference data for catch logbook systems, which in turn might publish their data (to authorised users) on national catch logbook APIs. Such a "federated" approach to managing data would have many advantages (and some disadvantages) for RFMOs.

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[29] For example: case information, vessel register, transhipment data
[30] For example: "what EEZ does latitude/longitude XYZ fall within?"