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National IMS and E-Reporting: Current status and future plans

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NATIONAL IMS AND E-REPORTING: CURRENT STATUS AND FUTURE PLANS

Executive Summary

1. National IMS (Information Management Systems) are designed to make it easier for countries to manage all components of their tuna fisheries data in one integrated set of database systems supported locally or in the “cloud”. SPC and the Pacific Islands Forum Fisheries Agency (FFA) have been collaborating to provide a national IMS portal with components covering both scientific and MCS data that satisfy both national and regional requirements. SPC are also collaborating with Papua New Guinea National Fisheries Authority (PNG/NFA) and the Office of the Parties to the Nauru Agreement (PNA Office) in their implementation of comprehensive iFIMS and FIMS systems which are focussed on catch documentation (eCDS) and fisheries management (Vessel Days Scheme-VDS).
2. Regardless of the National IMS option selected by member countries, it is clear that collaboration amongst the regional agencies and national fisheries offices is fundamental to its success, inter alia, satisfying data-reporting requirements for regionally coordinated work such as the regional stock assessments, regional fisheries management (e.g. the PNA VDS) and regionally coordinated MCS. Regional agencies will, to the best of their abilities, ensure that different IMS systems will be compatible, with transparent integration where necessary, while ensuring data confidentiality and security are maintained.
3. Over the longer term, E-Reporting (and possibly E-Monitoring) have the potential to provide significant gains in cost-saving and efficiency although there will need to be considerable planning and resources (with some initial cost implications) in establishing a viable infrastructure in member countries. This paper briefly outlines the current status of E-Reporting and E-Monitoring and where regional agencies are best placed to be involved in the future, including a suggestion to produce guidelines for what a country will need to consider before moving towards large-scale implementation of E-Reporting and E-Monitoring.
4. Member countries are requested to consider the following points for discussion:
 - Are you satisfied with the progress with National IMS Systems?
 - What are the main areas regional agencies should focus on to improve implementation of National IMS?
 - What are the major impediments preventing your country implementing E-REPORTING?
 - What are the main areas regional agencies should focus on to improve implementation E-REPORTING in your country?

Status of current National IMS systems in the region

5. A National Tuna Fisheries IMS (Information Management System) is designed to make it easier for countries to manage all components of their tuna fisheries data in one integrated set of database systems supported locally or in the “cloud”. There are currently two IMS systems available to member countries: Table 1 outlines the components of National IMS systems that are currently supported by FFA and SPC, and Figure 1 outlines the components of iFIMS system used by the PNG/NFA and the PNA Office and developed by the third party service provider, QUICK ACCESS COMPUTING (QAC).

Table 1. Components in the National IMS Systems supported by FFA and SPC.

Components in the FFA/SPC National IMS Systems

- Change Request Manager
 - Dashboard
 - Data Management
 - Licensing
 - Observer Programme Management
 - Transhipment
 - Violations and Prosecutions
 - Vessel Day Scheme
 - Vessel Monitoring System
 - WCPFC RFV
 - TUFMAN-2: Logsheets
 - TUFMAN-2: Port Sampling
 - TUFMAN-2: Unloadings / Transhipments
 - TUFMAN-2: Data Loaders
 - TUBs: Observer Data Entry
 - TUFMAN/TUBs: web reporting service
 - Master Reference Table Management
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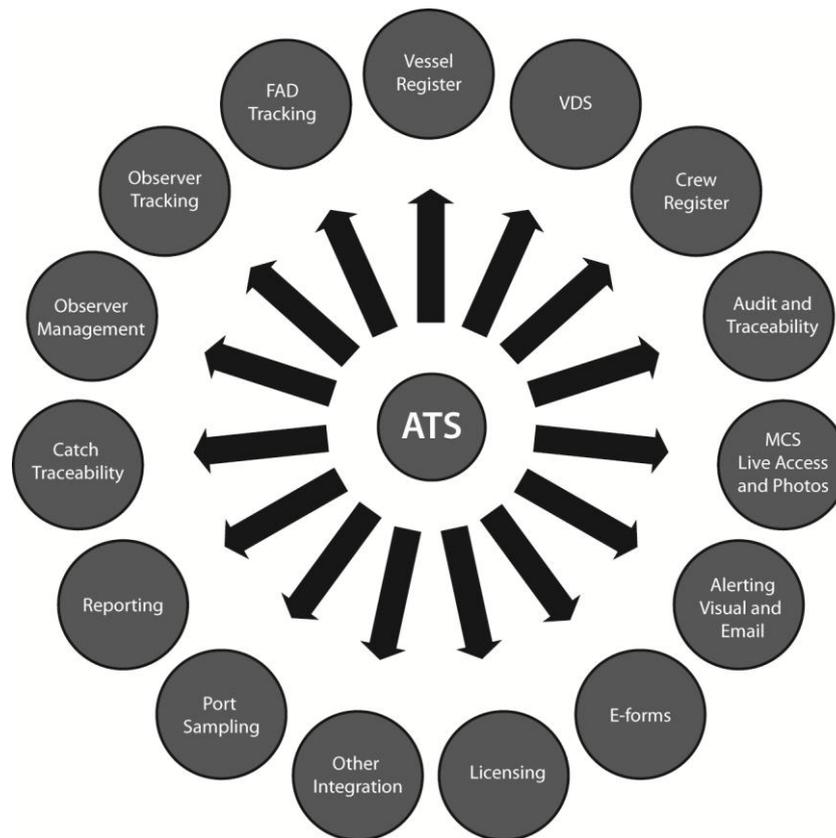


Figure 1. Components of the iFIMS system with central Asset Tracking System (ATS) (courtesy www.iFIMS.com).

6. The national Tuna Fisheries Data Management system (TUFMAN) has been supported in member countries since 2004, but has only focussed on the requirements related to scientific data management and reporting, and lacks the support for MCS-level data management, for example. The National IMS System now supported by FFA and SPC includes components covering both scientific data (supported by SPC) and MCS data (supported by FFA), satisfying both national and regional requirements for data management and reporting. This IMS supports “cloud” database hosting (which enables authorised users to report on your data wherever the internet is available), but also recognises that countries have concerns on data confidentiality, so the system also supports the hosting of data on local in-country servers. An additional benefit of the National IMS is on the reporting side — reports can be developed to easily combine different types of data, for example, a report comparing the logsheet trip catch with observer data and unloadings data is now possible. At this stage, components of the National IMS System (e.g. the OPM) are being used by most FFA member countries.

7. The TUFMAN system is currently undergoing redevelopment and will be released for initial trial in mid-2015 as “TUFMAN-2”; the features of TUFMAN-2 include:
 - automatic sharing of logsheet data to reduce duplication of data entry (amongst countries and at SPC);
 - better reference table management to reduce workloads and improve regional data analysis;
 - automated sending of data to SPC — this means no more manual backups and TUFMAN Reports will be automatically updated;
 - better handling and distribution of e-reported data;
 - full compatibility with current e-reporting systems (e.g. iFIMS eLOGBOOK and eTUNALOG);
 - cloud-hosting option: a country may choose to have TUFMAN-2 hosted by SPC (or you may choose to have it hosted on your local servers);
 - two user interfaces: one on Windows and one browser-based — this will allow TUFMAN-2 to be used anywhere in the world by authorised users with a secure login;
 - integration into the National IMS, with reports capable of cross-referencing multiple data types supported under the IMS.

8. PNG/NFA and the PNA Office have used the services of a third-party service provider (QAC) to develop comprehensive IMS systems called iFIMS/FIMS systems which are purpose-built to cover the wide ranging requirements to manage purse-seine tuna fisheries at both the national and sub-regional level. At this stage, these systems have primarily focussed on an elaborate catch documentation system (eCDS) and fisheries management (e.g. supporting Vessel Days Scheme-VDS). PNA member countries have access and regularly use the PNA FIMS system, mainly related to the VDS component. At this stage, PNG/NFA have fully implemented the iFIMS system at the national level, the Solomon Islands have committed to this system commencing in 2015 and several other PNA member countries have expressed interest in adopting this system. The most recent development with the iFIMS system is the release of the observer tablet component of the iFIMS eCDS which enables observer data (related to CDS) to be collected using tablets on-board purse-seine vessels which are then transmitted to the iFIMS as one key source to verify catch information as a part of the eCDS (Karis et al. 2014).

Future plans with National IMS

9. A joint SPC/FFA draft work plan for 2015 including National IMS initiatives is provided in the Annex of this paper, and a summary of the overall SPC/OFP Data Management Section draft 2015/2016 work plan is available in OFP (2015).

10. In summary, the IMS systems will continue to be advanced and rolled out over the coming years and regardless of the IMS option selected by member countries, it is clear that collaboration amongst the regional agencies and national fisheries offices is fundamental to its success, including satisfying data-reporting requirements for regionally coordinated work such as the regional stock assessments, regional fisheries management (e.g. the PNA VDS) and regionally coordinated MCS. Regional agencies will, to the best of their abilities, ensure that different IMS systems will be compatible, with transparent integration where necessary, while ensuring data confidentiality and security are maintained.

Status of current E-Reporting in the region

11. The outcomes of recent workshops, studies and initiatives relating to E-Reporting and E-Monitoring in the region have been described in a number of reports (Dunn and Knuckey 2013; Anon. 2014; Hosken et al. 2014a,b; Karis et al. 2014; Smith 2014).
12. Dunn and Knuckey (2013) provide the most comprehensive review of the potential for E-Reporting and E-Monitoring in our region. This report provides definitions that clearly delineate what we mean by “E-Reporting” versus “E-Monitoring” and a recent WCPFC workshop (Anon. 2014) acknowledged that the implementation of “E-Monitoring” in the region would generally lag behind the implementation of “E-Reporting”. While some countries are trialling (Hosken et al. 2014a) and implementing E-Monitoring (e.g. Australia; AFMA 2015), the information below concentrates on E-Reporting issues, many of which also apply to E-Monitoring.
13. The following statements summarise the current status of E-Reporting in the region:
14. From a technical viewpoint, E-Reporting clearly works, as demonstrated in the following examples:
 - PNG/NFA trials with the eLOGBOOK component of the iFIMS¹ eCDS system has now led to full implementation (i.e. requirement) for all PNG licensed purse-seine vessels as at January 2015 (Karis et al. 2014);
 - both PNG and the Republic of the Marshall Islands (RMI) have recently begun to trial the Observer tablet E-Reporting component of the iFIMS CDS system (Karis et al. 2014);
 - SPC trials of eTUNALOG on 32 purse-seine vessels and two longline vessels to date (update on Hosken et al. 2014b);
 - SPC trials of eTUBS onboard observer data entry on 8 purse-seine vessels (update on Hosken et al. 2014b); and
 - trials of the MARLIN (Electronic Logsheet) by the Philippines purse-seine fleet (Ramiscal et al. 2014).

¹ Integrated Fisheries Information Management System (iFIMS) developed by QAC.

15. The day-to-day management of E-Reporting systems will require dedicated resources:
- Experience in conducting E-Reporting trials shows that dedicated positions will need to be established (or the duties in existing positions changed) to adequately support E-Reporting implemented on a medium-large scale.
 - Implementing E-Reporting in its simplest form (e.g. a standalone eLOGBOOK system for a domestic fleet) should not need resources beyond what currently exist within a National Fisheries office today, although there will need to be consideration of upskilling and changing the duties of existing staff members.
 - Implementing more comprehensive E-Reporting systems will require additional staff; for example, national E-Reporting Officers have been established in two countries to support the Observer E-Reporting trials and the support staff may need to increase when the decision is made to move to full implementation. Smith (2014) outlines what resources may be required to support E-Reporting in countries and SPC/OFP can provide a template of objectives and duties of national E-Reporting officers in the form of a Memorandum of Understanding (MOU) (which has already been used by three countries).
16. Most countries are interested in E-Reporting trials but only one country has proceeded with full implementation:
- At this stage, PNG is the only country to proceed to full E-Reporting implementation, although a number of countries intend to move from trial to implementation in the coming years (RMI and Solomon Islands have commenced the move towards implementation). It is clear that the implementation of E-Reporting requires full commitment and planning from the outset.
17. The main impediments to implementation of E-Reporting are not technical.
- The impediments have been discussed at regional workshops (e.g. Anon, 2014) and include (i) the work involved in reviewing and changing policy and legislation to best support E-Reporting, (ii) concerns on data security, (iii) concerns on costs for resources and equipment, (iii) the delays in establishing regional data standards, (iv) simple lack of commitment to move towards implementing E-Reporting (e.g. this includes moving from “trial” to “implementation”), (v) the lack of policy and agreement on E-Reporting data sharing (at regional, sub-regional and bilateral levels).
 - These impediments can be resolved and regional agencies have a role to play to assist member countries in this process.

18. Regional agencies have a role to support E-Reporting.

Role of SPC in E-Reporting and E-Monitoring

SPC's mandate is to provide technical assistance to its member countries. The development of the two E-Reporting products (eTUNALOG and eTUBS) is one way that SPC has responded to member countries requests. These products have been developed to respond to two immediate needs. The first is to improve the efficiency of data collection/management and the second is to have data available in a timely manner. These are the overriding objectives for both member countries and the SPC, and are consistent with the reporting obligations of member countries to the WCFPC.

SPC acknowledges that more comprehensive, integrated E-Reporting systems developed by third-party service providers have and will continue to become available in the future, (for example, the PNG/NFA iFIMS E-Reporting system launched in January 2015) and that SPC will be available in a collaborating role, as required, when our member countries choose to use these systems.

- Over the past two years, SPC has been gaining experience in E-Reporting systems, from both a product development point of view and an operational point of view (through the Regional E-Reporting Coordinator's oversight of a number of E-Reporting trials). SPC are now better placed to support our member countries' aspirations for E-Reporting.
- FFA are well positioned to provide a complementary service to member countries with respect to E-Reporting, including trials involving MCS data and the provision of advice related to (i) changes to national policy and legislation to better support E-Reporting, and studies on cost-benefit and cost-recovery related to E-Reporting.
- A recent WCPFC workshop (Anon, 2014) identified "...a priority task of developing draft standards, specifications, and procedures for the use of E-monitoring and E-reporting technologies in Commission-managed fisheries." While the WCPFC is not expected to have a direct involvement in implementing E-Reporting systems beyond the current WCPFC VMS, it is well positioned to coordinate the establishment of E-Reporting data standards aligned with the WCFPC requirements for scientific data, for example.
- The PNA Office has established E-Reporting systems aligned to their purse-seine vessel days scheme (VDS) and Catch Documentation (eCDS), both of which are fully compatible with the national iFIMS system developed by QAC. The purse-seine industry's need for eCDS and the VDS component of the PNA FIMS appear to be the main drivers for PNA countries to implement E-Reporting (as a consequence).
- Member countries will be the drivers of E-Reporting implementation when it is appropriate for them to proceed and regional agencies are better placed to support that move when it happens.
- Non-governmental organisations (NGOs) also recognise the importance of E-Reporting and E-Monitoring in providing more accurate, complete and timely data for the work of the WCFPC in ensuring the sustainable management of the fishery, and have directly supported a number of trials in E-Reporting and E-Monitoring.

Future plans with E-Reporting

19. While it is clear that E-Reporting will gradually be adopted over time, it is difficult to predict with precision how and when E-Reporting will be implemented by member countries. It appears that most countries are waiting for feedback (after the first year's operation) of a fully implemented E-Reporting system before committing themselves to implementation; the comprehensive iFIMS/FIMS system implemented by PNG/NFA this year is therefore providing the region with the impetus needed for E-Reporting and the feedback to be provided in late 2015/early 2016 will be important to moving forward. One of the main benefits for potential future users of a fully implemented, operational E-Reporting system is, for example, some of the logbook data collected through the system now (for example, activities in your country's EEZ) should be automatically available once data flow/sharing rules are agreed.
20. SPC is positioning itself to best respond to what will be a variety of E-Reporting related requests from member countries in the coming years to (i) continue the coordination, support and evaluation of E-Reporting trials, (ii) enhance database systems and other products to support the management and dissemination of E-Reported data, and (iii) advise and participate in the implementation of E-Reporting, as required. FFA also has an important role with (i) advice on areas that will need to be reviewed and updated in national policy and legislation to best support E-Reporting, (ii) E-Reporting trials related to the regional coordination of MCS, and (iii) studies on cost-benefit and cost-recovery which are fundamental during the planning phase for implementing any national E-Reporting system.
21. SPC and FFA can assist member countries in the future by producing a detailed set of guidelines covering the resource requirements and the processes involved that lead a country to implementing E-Reporting.
22. A joint SPC/FFA draft work plan for 2015 including E-Reporting initiatives is provided in the Annex of this paper, and a summary of the overall SPC/OFP Data Management Section draft 2015/2016 work plan is available in OFP (2015).

Points to consider/discuss from your country's perspective

23.
 - i. Are you satisfied with the progress with National IMS Systems?
 - ii. What are the main areas regional agencies should focus on to improve implementation of National IMS?
 - iii. What are the major impediments preventing your country implementing E-REPORTING?
 - iv. What are the main areas regional agencies should focus on to improve implementation E-REPORTING in your country?

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ANNEX — Provisional SPC/FFA National IMS and E-Reporting joint work plan 2015

Note that the following is a working draft and the schedule is yet to be confirmed internally and with member countries.

Month	SPC Travel/Purpose	FFA Travel/Purpose
January		
February	<ul style="list-style-type: none"> - Solomon Islands (Review of EM trial and potential trials of eTUBs and LL eTUNALOG) - Pago Pago (Establishment of E-Reporting Officer, training, etc.) - SPC/FFA Colloquium. Update the data exchange agreement 	<ul style="list-style-type: none"> - SPC/FFA Colloquium Update the data sharing agreement - TVM Governing Council meeting - Update on IMS development - Tokelau (VSAT installation)
March	<ul style="list-style-type: none"> - FSM (Visit to review the observer data entry using the TUBs system at the WCPFC offices, data quality control and review the observer data management between WCPFC offices and NORMA) + final interviews for E-Reporting Officer, appointment and training 	<ul style="list-style-type: none"> - 1st Regional IMS Workshop (Honiara) - Tonga (IMS development)
April	<ul style="list-style-type: none"> - TDW9 (Noumea) - Annual SPC/FFA IMS Group Meeting (Brisbane or Nadi) 	<ul style="list-style-type: none"> - TDW9 (Noumea) — (attended by FFA Systems Analyst and Data Quality Officer (DQO); attachment with OFP for DQO?) - Annual SPC/FFA IMS Group Meeting (Brisbane or Nadi) - Samoa (IMS development) - FSM (BOJAK trials) - EVR trials
May	<ul style="list-style-type: none"> - Solomon Islands (Visit to FFA to support the Observer data entry system, provide training in TUBS REporting tool, Observer Data Quality control, etc.) - Fiji (Visit to review the observer data entry using the TUBs system) 	<ul style="list-style-type: none"> - Tuvalu (IMS development) - Solomon Islands (BOJAK trials) - Fiji (IMS development) - EVR trials
June		<ul style="list-style-type: none"> - Nauru (IMS visit) - Cook Islands (BOJAK trials) - EVR trials

Month	SPC Travel/Purpose	FFA Travel/Purpose
July	- Vanuatu (TUBS trial – installation and training) - RMI (TUFMAN-2 trial and training)	- Kiribati (VSAT installation) - Vanuatu (IMS visit) - RMI (IMS development; integration of IMS with TUFMAN-2; BOJAK trials)
August	- Cook Islands (TUFMAN-2 trial and training; QMS support; integration of LL eTUNALOG data)	- Cook Islands (IMS development; QMS support; integration of IMS with TUFMAN-2; NTIS roll-out) - NTIS roll-out
September		- NTIS roll-out
October	- Cook Islands (TUBS trial – installation and training; QMS Support)	- NTIS roll-out
November	- FFA Installation of TUFMAN-2? - Kiribati (TUBS trial – installation and training)	- Kiribati (IMS development)
December		

Yet to add:

- SPC: *Ad hoc* In-country database system training. Specific database system and report training requests received from a number of countries (e.g. Nauru, Palau, Fiji) — yet to be confirmed
- SPC: Participation in joint national tuna data workshops with the SPC Fisheries Monitoring Section (none scheduled for 2015 at this stage)
- SPC: Attachment training to SPC
- FFA: *Ad hoc* in-country training specifically for OPM
- FFA: Anticipated in-country roll-out and training for NTIS to NTSA signatories