



E-MONITORING AND E-REPORTING WORKSHOP

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E-Reporting and E-Monitoring in the Western and Central Pacific Ocean

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SPC
Secretariat
of the Pacific
Community



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Objectives

- ▶ Develop a common understanding and language of E-Reporting and E-Monitoring
 - ▶ Document and evaluate existing current and future E-Reporting technologies
 - ▶ Document and evaluate existing current and future E-Monitoring technologies
 - ▶ Propose potential scenarios for implementation of E-Reporting and E-Monitoring to guide discussions
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Definitions: E-reporting (E-R)

Hardware /software for manual recording and transmission of fisheries information.

- ▶ E-R is an “*open system*”
 - Manual inputs and transmission required
- ▶ Transmission of data
 - Download at the end of a trip
 - Real-time reporting of critical information via satellite or mobile networks.
- ▶ WCPO tuna opportunities include catch logsheets, observer reports, transshipment reports, and port sampling records.

Definitions: E-monitoring (E-M)

Hardware / software with automated collection and transmission of fisheries information

- ▶ E-M is a “*closed system*”
 - eg. VMS
 - Does not accept external or manual input
 - No manipulation of data.
 - Automated operations, and tamper-proof
- ▶ WCPO tuna opportunities include use of on-board video, winch and engine sensors, vessel AIS, satellite tracking of FADS and fish tagging program monitoring.

Global Review

- ▶ An abundance of E-R technologies for logbooks and observers
 - Wide range in capabilities and price
 - Implemented in many small and large fisheries
 - Many of a standard to easily apply to WCPO Tuna
 - Can replace paper system with minimal disruption
- ▶ Main E-M is VMS but very limited adoption of video, sensor, and other E-M systems
 - Products available for adaptation to WCPO
 - Applications to WCPO tuna fisheries need to be determined

Employment: E-Reporting

▶ Issues

- Loss of many administrative roles
 - Managing paper logsheets / observer reports
 - Key punching logsheets and reports

▶ Response

- Data entry → Data analysis and reporting
- Up-skill positions
- Overall more value back to the nations / fishery
- Improved efficiency

Employment: E-Monitoring

▶ Issues

- Cameras will replace observers

▶ Response

- E-M V can only replace some observer functions
 - Many functions can not be replaced
- E-M V can alleviate onboard observer demands and cover downtime (space / time)
- Real option for coverage of longline vessels or conditions unsuitable for observers

Compliance

▶ Issue

- Compliance risk / compliance operations require multiple parallel information sources
 - Difficult to achieve in current paper system
 - High level of manual compilation of information

▶ Response


- Simultaneous access to multiple sources of information (logsheets, observer, port, CMM) at end of trip or near real time
- Potential to access to real time onboard catch data
- More valuable Compliance Index
- More targeted compliance operations

Efficiency

▶ Issue

- Double handling and storage of paper-based data
- Multiple data entry points (scanning / posting)
- Differing timeframes between collection and entry

▶ Response

- Single / timely data entry point by appropriate people
 - Transfer of resources from data entry to analysis and reporting
 - Reduced verification and checking of data
 - Validation of data using multiple sources
 - Near real-time transmission of data to multiple users
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Occupational Health & Safety

▶ Issues

- Difficult and dangerous working conditions
- Concern about observer OH&S

▶ Response

- Satellite communication technology
 - Available, functional and relatively cheap
- Daily updates possible
- Formal real-time incident reporting and response

Research

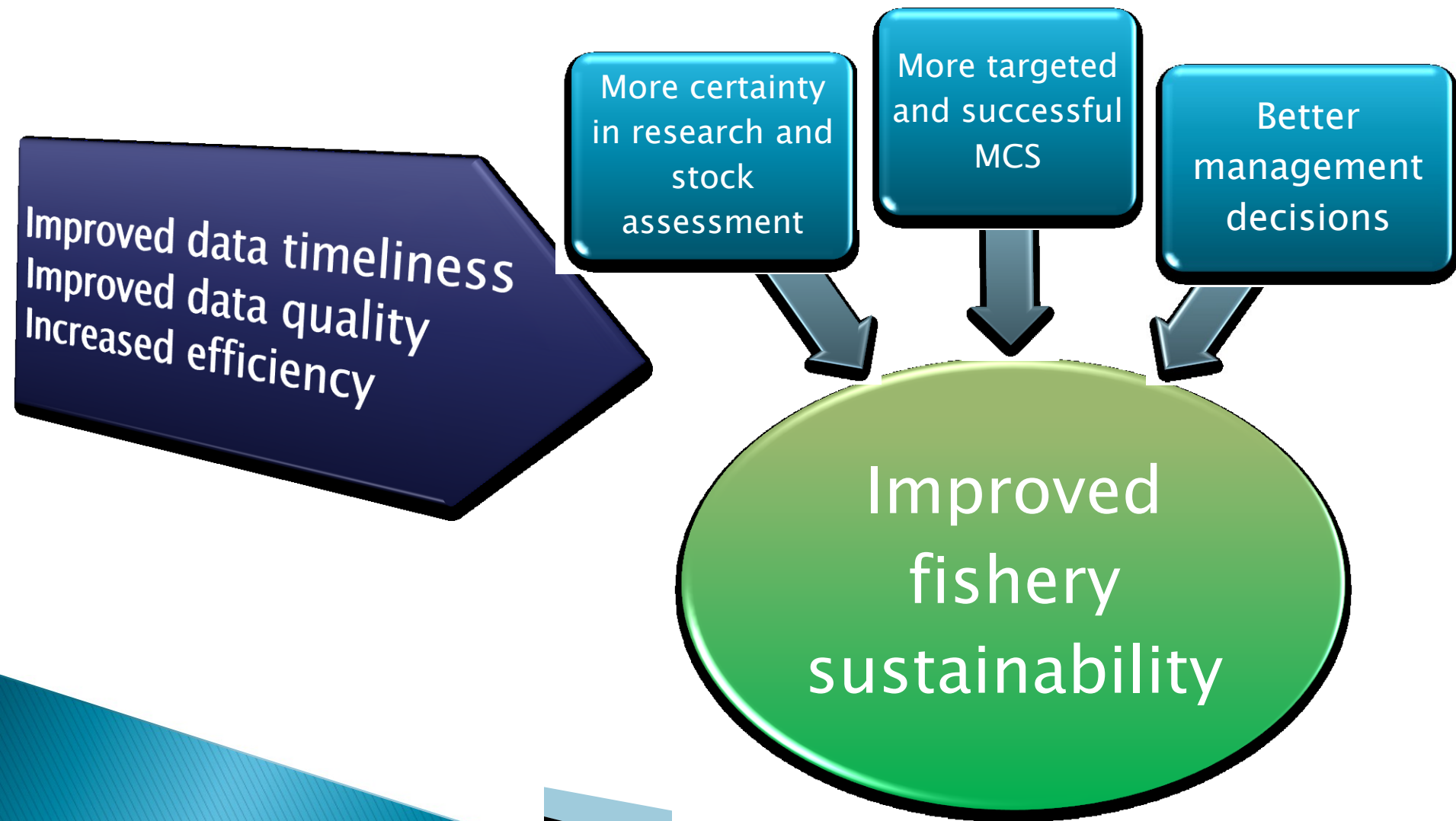
► Issues

- High quality information from various sources
- % information not available for annual assessments
- Verification, validation and quality checking of data takes extensive amounts of scientist's time
- Specifically shark bycatch on longlines

► Response

- Marked improvement in quality and timeliness
 - Immediate data entry / automatic population / dropdown boxes / mandatory fields
- E-M Video potential for longline shark bycatch

E-reporting / E-monitoring



E-Reporting

Develop a common understanding and language of E-Reporting and E-Monitoring

Document and evaluate existing current and future E-Reporting technologies

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E-Reporting uses

Phase 1 – End of Trip

- ▶ Port sampling
- ▶ Vessel logsheets
- ▶ Observer reports
- ▶ Unloading report
- ▶ Catch documentation
- ▶ Marketing

Phase 2 – Real Time

- ▶ Zone entry / exit
- ▶ Species of interest
- ▶ Prior notification of port arrival
- ▶ Bunkering and transshipping
- ▶ Catch reports to company
- ▶ Catch reports to agency
- ▶ Observer setting on FADs

- ▶ Aerial surveillance
- ▶ Vessel boarding parties

E-reporting

- ▶ Technology is ready to go now.....
- ▶ Just need agreement to start (SR-1) and how to go about it (SR-2)!
- ▶ Recommend a phased implementation based on feasibility and constraints (SR-3)
- ▶ Recommend an E-Project working group (EWG) focussed on E-R Implementation (SR-5) to reach agreement on the technical issues

DATA STANDARDS AND PROCEDURES ARE
ESSENTIAL FOR ANY COORDINATED APPROACH



E-reporting

- ▶ Technical issues for EWG:
 - Use current data requirements (R-1)
 - Agreed E-R information, formats, standards (R-2)
 - Evaluate XML as serialisation format for non-satellite (end of trip) reporting (R-3)
 - Evaluate serialisation format for satellite (real-time) reporting (R-4)
 - Use what is already being done in other countries to assist in data standards and procedures (R-5)
 - Decide on logsheet data transmission pathways (R-6)
 - Decide info for real-time reporting (R-11)
 - Real-time observer as backup for real-time logsheet (R-12)

E-reporting

► Scope of initial E-R implementation

There is an easy and a hard way – choose easy!

- Use current data requirements (R-1)
- Use what is already being done in other countries to assist in data standards and procedures (R-5)
- Initial focus on end of trip reporting (R-7)
(later implementation of real-time) (R-8,9,11,12)
- Introduce end-of-trip reporting for observers and logsheets in parallel (R-10)
- Any CMM E-R should focus on vessel-agency (R-13)
- CMM E-R agency-WCPFC when good uptake (R-14)

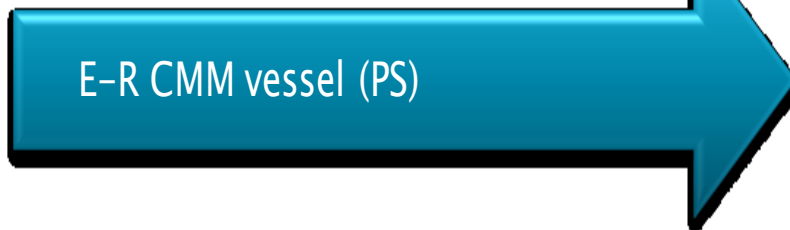
E-reporting

- ▶ Implementation of real-time E-R
 - Can be done but more issues to consider
 - Costs
 - technological capacity – vessel and shore
 - Satellite transmission
 - Initial focus on end of trip reporting (R-7)
 - Wait until end-of-trip E-R is well established (R-9)
 - Establish minimum fields for scientific and CMM reporting (R-8) but can start using real-time initially for OH&S (R-11)
 - Real-time observer as backup for real-time logsheet (R-12)

E-R

Agreement
Data standards
Certification

Phase 1



Phase 2



Phase 3



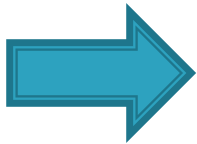
E-Monitoring

What was our job?

- ▶ Propose recommendations for a practical and efficient framework for implementation of E-Monitoring to guide discussions of a dedicated working group.

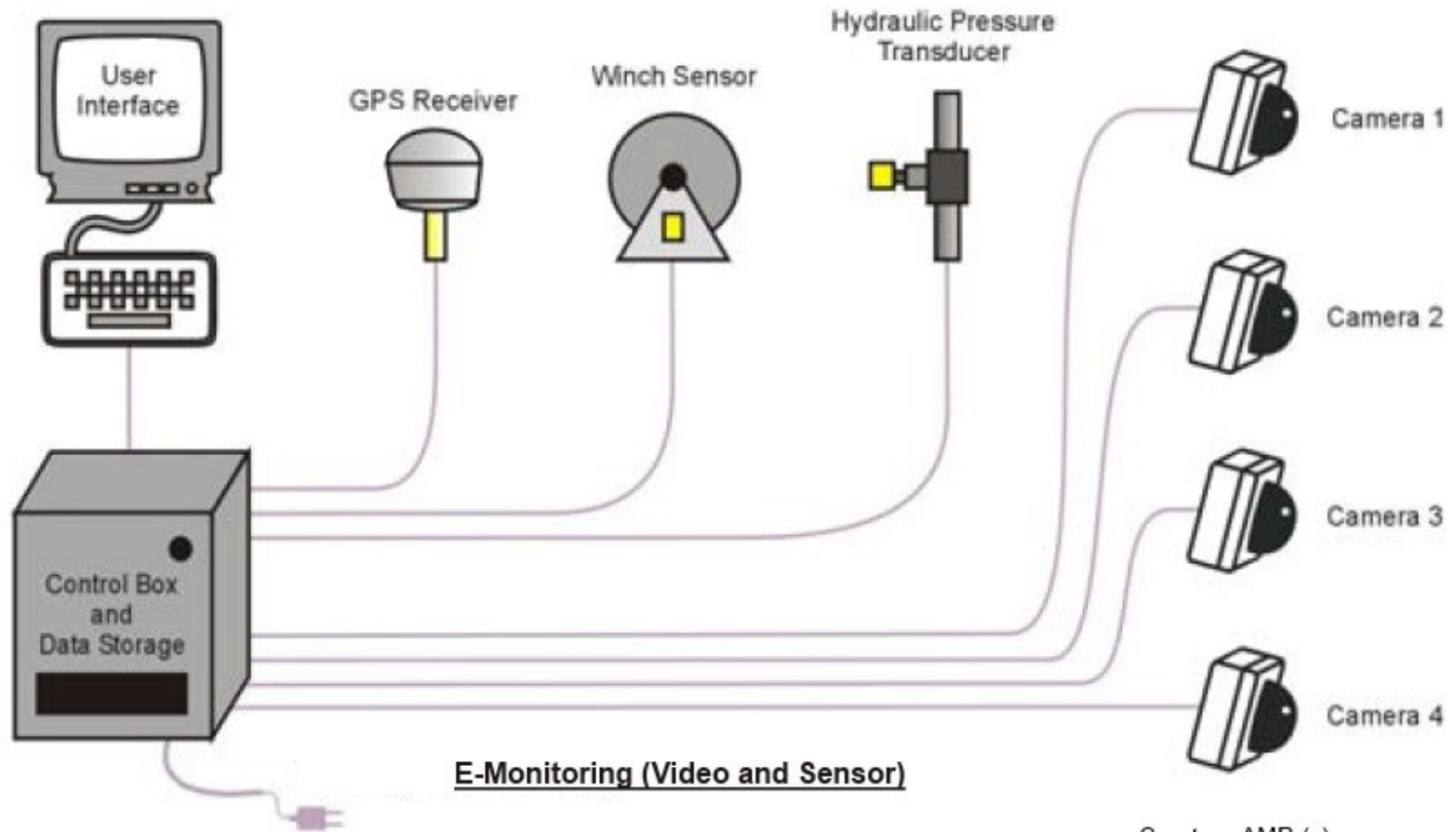
E-Monitoring definition

- Automated data collection
- Automated transmission or clearly defined transmission rules
- Data is in a closed system or “black box”
- Fishery E-Monitoring includes range of systems and technologies:



- Video
- Sensor
- VMS
- AIS
- FAD tracking
- Fishery certification
- Catch documentation

E-M video and sensor schematic:



Cameras



E-M Analysis

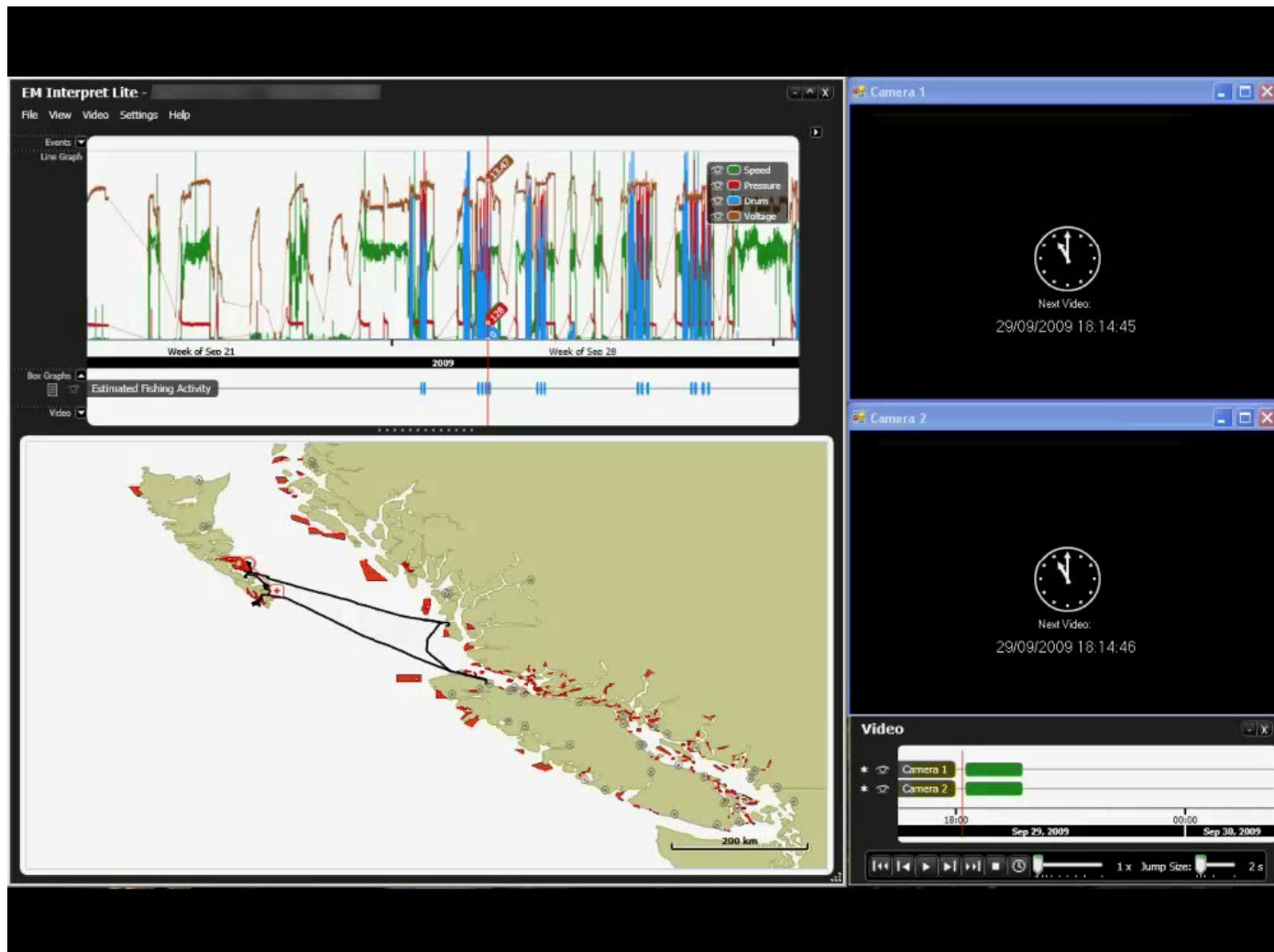


Image quality



Observer Activities

E-M Video activities

24 x 7 operation	Easily achieved with current technology
Automatically "woken"	
Reviewable observations	
Tamper evident	
Monitoring deck activities	Potentially achieved with current technology
Monitoring transshipment activities	
Monitoring bunkering activities	
Monitoring hold contents	
Monitoring online catch composition	
Catch weight estimation	
Monitoring species of interest	
Monitoring setting of FADs	Unable to be achieved with current technology
Monitoring of nearby vessels	
Monitoring purse seine catch composition	
Collecting length-frequency information	
Collecting biological information	
Liaison with crew	

E-Monitoring phased approach

Phase 1 – End of Trip

Video / image / sensor data

- ▶ Target catch composition
- ▶ Bycatch composition (shark)
- ▶ Species of interest (onboard and in net)
- ▶ FAD setting
- ▶ Deck activities
- ▶ OH&S
- ▶ Transshipment
- ▶ Bunkering

Phase 2 – Real Time

Sensor data

- ▶ Gear setting / retrieval
- ▶ Engine start / stop / slow
- ▶ Transshipment
- ▶ Bunkering
- ▶ System check
- ▶ Setting on tracked FADs
- ▶ VMS

E-Monitoring obvious uses

Data collection

- ▶ Longline
 - Catch composition
 - Species of interest
 - CMMs
- ▶ Vessel activities beyond observer coverage (are or time)
- ▶ VMS

Data validation

- ▶ All fisheries
- ▶ Target catch composition
- ▶ Bycatch composition (shark)
- ▶ Species of interest
- ▶ FAD setting
- ▶ Vessel activities
- ▶ OH&S
- ▶ Transshipment
- ▶ Bunkering

E-M

Agreement
Data standards
Certification and Policies

Phase 1

E-M Purse seine

E-M Reefer

Phase 2


E-M Longline (catch)

Recommendations


Strategic:


- ▶ E-Monitoring be formally recognised and adopted as a legitimate, appropriate and acceptable monitoring tool. As both an alternate to human observer programs and a supplement to observer programs, for certain WCPO tuna fisheries.

continued..


- ▶ The process for development of E–M standards, specifications and type approvals should be led by the Commission Secretariat as a priority and E–M should be progressively rolled out to support compliance with Commission's CMMs, improve fishing practices, and increase fisheries knowledge.
 - ▶ The use of E–M using sensors alone should be considered as appropriate, based on fishery monitoring goals.
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Specific E–M Recommendations

- ▶ Six specific E–M recommendations: 18 to 22, and 28
 - ▶ Recommendation 18: It is recommended the focus of E–M administration be through existing sub–regional observer programs, and national fishery agencies.
 - ▶ Recommendation 19: It is recommended that hardware and software be purchased, installed, and maintained by vessel owners.
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- ▶ 20: It is recommended that procedures be developed to facilitate all four options for data retrieval, based upon a risk assessment of the circumstances of each type and variation of data retrieval. (Fisheries regulatory officer, other authorised officer, observer, or vessel master)
 - ▶ 21: It is recommended that national fishery agencies, and regional observer programs be responsible for analysis of video and sensor data.
 - ▶ 22: It is recommended these matters be referred to the EWG tasked with progressing E–M for resolution.
 - ▶ 28: The Commission Secretariat should facilitate E–M demonstration trials and develop a broad communication strategy.
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Challenges

- ▶ Politics
 - ▶ Capacity building and training
 - ▶ Data management, storage, and confidentiality
 - ▶ Resistance from stakeholders
 - ▶ Logistics
 - Hard drive exchange
 - Installation and maintenance
 - ▶ Cost
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General Recommendations

- ▶ Broadly there are two groupings of general recommendations.
- ▶ **Group 1:**
 - **General program implementation**
 - Covers Strategic Recommendations 1, and Recommendations 15, 16, 17, 28, 30, 31, 32.
- ▶ **Group 2:**
 - **General governance**
 - Covers Strategic Recommendation 5, and Recommendations 23, 24, 25, 26, 27, 29.

General recommendations on program implementation

(SR 1, and R 15, 16, 17, 30, 31, 32)

► Relates to:

- Processes for development of standards and specifications, policies and procedures
- Development of a communications strategy
- Implementation planning
- Costs and benefits, and
- Model fisheries legislation


General recommendations on governance

(SR 3, and R 23, 24, 25, 26, 27, 28)

- ▶ Relates to:
 - The establishment of E–Project Working Groups (EWGs)
 - Membership and chairing arrangements
 - Overarching governance arrangements
 - Project management
 - Development of EWG terms of reference




5 Strategic Recommendations

1. Implement both E-Reporting and E-Monitoring programs without delay.
 2. Develop standards, specifications, and certification procedures for both E-R & EM.
 3. Implement E-R in a phased approach determined by technical feasibility, and practical considerations and constraints.
 4. Recognise E-M as a legitimate, appropriate and acceptable monitoring tool
 5. Implement separate but parallel processes to move E-R & E-M technologies forward.
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Strategic Recommendation 1

To improve quality and timeliness of the data available for science, compliance, and management, to enhance and streamline reporting obligations, and to provide an additional means of effective observer monitoring, this report recommends the Commission, its members, and its partner regional organisation within the WCPO implement both E-Reporting and E-Monitoring programs without delay



Strategic Recommendation 2

The Commission should adopt an approach of developing standards, specifications, and certification procedures for both E-Reporting and E-Monitoring, against which any provider can seek to be certified, in preference to seeking a single provider.



Strategic Recommendation 3

The implementation of E-Reporting for logsheets, observer reports, and CMMs should be undertaken in a phased approach determined by technical feasibility, and practical considerations and constraints.

The process for development of E-Reporting standards, specifications and type approvals should be led by the Commission Secretariat as amongst the first and high priority actions




Strategic Recommendation 4

E-Monitoring be formally recognised and adopted as a legitimate, appropriate and acceptable monitoring tool as both an alternate to human observer programs and a supplement to observer programs, for certain WCPO tuna fisheries.

The use of E-M using sensors alone should be considered as appropriate, based on fishery monitoring goals

Strategic Recommendation 4

The process for development of E-M standards, specifications and type approvals should be led by the Commission Secretariat as a priority and E-M should be progressively rolled out to support compliance with Commission's CMMs, improve fishing practices, and increase fisheries knowledge.



Strategic Recommendation 5

Implement separate but parallel processes to move E-Reporting and E-Monitoring technologies forward towards implementation. These processes should involve the establishment of an Implementation Working Group (IWG) for each technology, each with a Project Manager, and both under the oversight, direction and control of an Internal Governance Committee (IGC) to monitor project risks, budgets, potential conflicts of interest, and progress against agreed goals

