Implementing Electronic Monitoring (EM) Governance
for RFMO-Managed Fisheries

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Food and Agriculture Organization of the United Nations

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Effective implementation of electronic monitoring (EM) programs at scale requires a clear, well-thought-out governance design to ensure success from a regional fisheries management organization (RFMO) perspective. There are several options and many choices to be made about governance design and implementation, and there is no one size fits all. To support RFMOs in their decision making, the World Wildlife Fund Inc. (WWF-US) – through funding provided by the Global Environment Facility under the Common Oceans program – has produced a technical resource document intended to help decision makers understand their choices and options and highlights key decision points relating to EM governance that stakeholders will need to address.

The following brief provides an overview of the technical resource document, as well as a decision matrix intended to help program designers in making the best structural and operational choices based on their specific requirements and circumstances.

EM Governance Needs

- Appropriate national regulations/legislation requiring data collection or monitoring that can be addressed using EM.
- EM policy and guidance documents that define the objectives and needs of the programs.
- Multinational or regional agreements to enable effective EM data use in the management of highly migratory species.
- Minimum EM program standards.
- Specifications and procedures that accompany the standards to harmonize expectations for key processes.
- The necessary infrastructure to implement the program and carry out data analysis.
- A consultation program for relevant stakeholders to troubleshoot and improve all aspects of the system.
- Resources to train and maintain personnel on relevant tasks listed above.

RFMO Governance Considerations

Within an RFMO context, EM governance design will need to be carefully considered to ensure that EM Programs and the data they generate can meet performance standards. Program structure will look different depending on the scenario. For example, if the RFMO sets EM program standards, but member states develop and implement their own EM programs against those standards, mechanisms must be put in place to ensure that these programs are meeting the minimum performance standards. In addition, a governance structure must be implemented to enable the evolution of the overall EM program over time based on technology improvements and other factors.

Implementation Pathways for EM Governance

There are several EM implementation approaches that can be considered, including an RFMO-wide program, individual national programs, sub-regional programs, or aspects of national programs being pooled between countries. Each type has its advantages and disadvantages, with the most appropriate type influenced by the fishery management history, geography, and politics of the area. If a region has previously enjoyed an effective network of national observer programs for example, countries may feel comfortable staying with a similar model for an EM program.

The chart below highlights key advantages and disadvantages of each implementation pathway.

Table 1

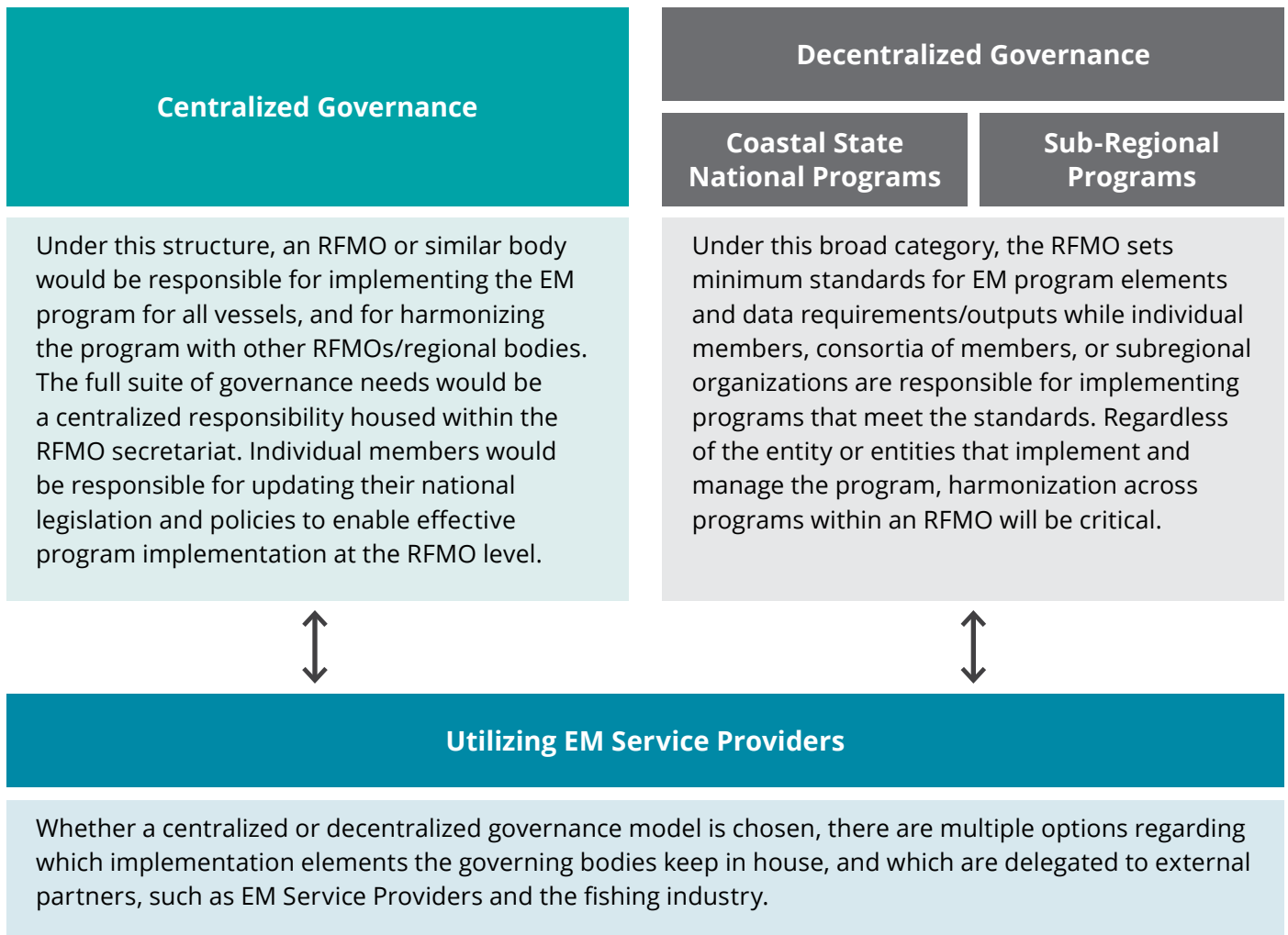| Centralized Model: Regional RFMO Program	Decentralized Model: Coastal State National Programs	Decentralized Model: Sub-Regional Programs
Advantages: • Uniformity – one system • Consistent quality of data • Economies of scale • Feasible for countries of all sizes and resources (lower costs for individual countries)	**Advantages:** • Coastal states can dictate access conditions • Easier to operationalize • States control their own data • Potential for local job creation • Best in areas with strong institutions to support coastal states	**Advantages:** • Could incorporate advantages of both regional and national programs • Countries may form like-minded sub-regional groups where consensus is easier to achieve
Challenges: • May take longer to implement • RFMO lack of technical capacity and funding • Large geographic areas to cover in single program • Data ownership and use concerns • Some countries may wish to develop their own systems	**Challenges:** • Higher start-up costs; fewer economies of scale • Can result in disparate programs • Potential for interoperability issues • Require agreements among member states and RFMO re: data • Still require a mechanism for high-seas coverage (i.e., RFMO coverage for high seas or flag state responsibility)	**Challenges:** • Ensuring countries not in a sub-regional group are still included in an EM program • Ensuring vessels can move seamlessly through different programs • Sub-regional groupings may dilute regional solidarity

Model Governance Scenarios

As summarized on previous page, there are many decisions that must be made when developing and implementing EM governance systems. Given how daunting this can seem, it's best to first determine what type of model may work best for the circumstance. One of the first decisions is to determine whether a centralized or decentralized model is most appropriate.

Table 2

Centralized Governance	Decentralized Governance	
	Coastal State National Programs	**Sub-Regional Programs**
Under this structure, an RFMO or similar body would be responsible for implementing the EM program for all vessels, and for harmonizing the program with other RFMOs/regional bodies. The full suite of governance needs would be a centralized responsibility housed within the RFMO secretariat. Individual members would be responsible for updating their national legislation and policies to enable effective program implementation at the RFMO level.	Under this broad category, the RFMO sets minimum standards for EM program elements and data requirements/outputs while individual members, consortia of members, or subregional organizations are responsible for implementing programs that meet the standards. Regardless of the entity or entities that implement and manage the program, harmonization across programs within an RFMO will be critical.	

Utilizing EM Service Providers

Whether a centralized or decentralized governance model is chosen, there are multiple options regarding which implementation elements the governing bodies keep in house, and which are delegated to external partners, such as EM Service Providers and the fishing industry.

Choosing the Right Model: Centralized vs. Decentralized Governance

There are many factors to evaluate when considering a centralized vs. decentralized model. Table 3 below shows a checklist of key questions that must be considered when determining an appropriate program model. Based on the responses to the questions noted in Table 3 – and which of these elements are considered highest priority – a clearer picture can be established to guide program scope and development of program implementation, as well as key decision points that may require further evaluation.

Table 3

Centralized Governance	Considerations	Decentralized Governance
☐ ←	Region has experience with other regional programs – i.e., observer programs	
☐ ←	Program uniformity across the region is important for consistent quality of data	
☐ ←	Vessels using the same system is important	
☐ ←	Centralized control of EM data is important	
☐ ←	Economies of scale are important	
☐ ←	There are limits to some member states financing their own programs	
	Some/all member states wish to control their own EM data	→ ☐
	There are data ownership and use concerns	→ ☐
	Using the program to generate local jobs is important	→ ☐
	Some like-minded nations wish to work together as a sub-regional group/s on some program elements	→ ☐
	Some countries already have, or wish to develop, their own programs	→ ☐
	RFMO members wish to dictate access conditions	→ ☐
	Centralizing costs at RFMOs is a concern	→ ☐

Implementing Program Elements: In-House vs. Outsourcing

Once it has been decided whether a centralized or decentralized model is the best fit, it must then be determined which programs elements will be kept in-house and which may best be outsourced to a third-party provider. Table 4 highlights key responsibilities to consider handling in house vs. through outsourcing:

Table 4

Responsibilities	In-House	Outsourcing
Designing individual Vessel Monitoring Plans (VMPs) for each member of the fleet	☐	☐
Installing & maintaining on-vessel systems	☐	☐
System approval/certification processes	☐	☐
Administering, training, & staffing the Data Review Center (DRC)	☐	☐
Undertaking independent audits of the EM data produced for EM records	☐	☐
Collecting and transporting EM records & ensuring their security & proper chain of custody	☐	☐
Responding to a system error or failure	☐	☐
Housing and storing EM records & EM data	☐	☐

There are no wrong answers to any of these questions, and what makes the most sense for a given program or region will vary with the local context of existing capacity, existing political will and collaborations, existing parallel programs that may serve as models, and the objectives and needs of the program.

Key Considerations: In-House vs. Outsourcing

While there is much to consider when determining which elements will be managed in-house or outsourced, there are several key elements that should be discussed early on in program design:

Data Review Centers

A data review center (DRC) is an entity with access to the software platform/s required to analyze EM records and generate EM data for the program/s. DRCs may be housed and administered by RFMOs, by individual RFMO members or cooperating parties, consortia of members or cooperating parties, sub-regional or regional bodies, or by a third-party service provider.

There are some benefits for many RFMO members associated with establishing their own DRC:

- Potential for local employment opportunities
- High degree of data control

However, managing and operating a DRC includes challenges:

- Establishing infrastructure
- Purchasing and maintaining equipment
- Ensuring reliable internet/connectivity
- Higher costs for maintaining the DRC

Auditing

Auditing refers to the process of cross-checking and verifying EM records and data through secondary review to maintain uniformly high-quality EM data through and across the program/s.

EM review and records analysis can also be achieved with an in-house model, or an external auditor could be contracted to provide this oversight, regardless of governance model. Either way, it's critical to ensure that the review and auditing processes remain independent of conflicts of interest to ensure they function properly.

Single vs. Multiple Provider Models

It is important to determine whether a single provider will work with the EM program being implemented, or if a multiple provider model will be a better fit. Each has advantages and challenges. For example, with sole provider models, there can be cost savings resulting from a tightly integrated end-to-end program. Multiple provider models may offer more ongoing incentive for providers to innovate, reduce costs, and compete with each other. The Technical Resource Document provides additional insights and considerations.

Technical and Physical Challenges

There are several technical and physical challenges associated with EM today that are poised to change as technology continues to advance. While some technological advancements aim to reduce costs, others, like some that focus on better meeting compliance and fisheries science needs, may increase costs. Thus, ongoing decision making will be needed.

Acknowledgments

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