



# **Catch Accounting Methods and Design Consideration for Commercial Fisheries**

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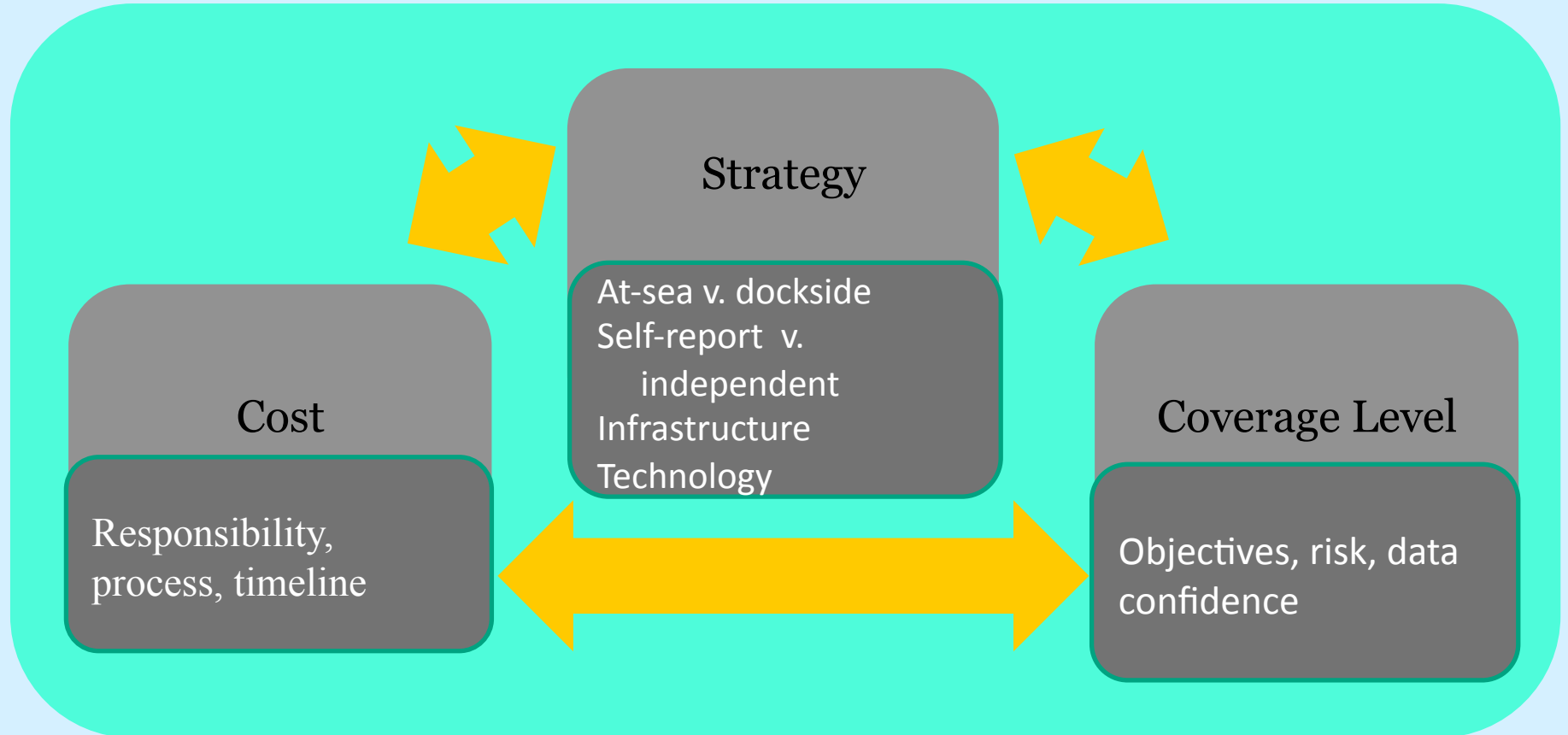
# Foundational Pieces

- Management Principles
- Understanding the fishery
- Stakeholder motivations and perspectives
- Economic context
- Enforcement, Management and Science Objectives

# Data Requirements

- Multiple stake holders
- Data confidence
- Timeliness
- Ownership and access
- Like to have --- Must have

# How to Collect the Data



# The Tool box

## Catch Accounting Strategies

2 Trays

### At Sea Data Collection

Information about:  
All catch  
Discard amts & conditions  
Protected spp. interactions  
Fishing location & effort  
Unsorted catch samples

#### Self Reported

Hails  
Fishing Logs  
Industry collected samples

Technology Options:  
Electronic Hails  
Electronic Logs

#### Independent Collection

Aerial Surveys  
At Sea Observers  
Fishing Log Audit

Technology Options:  
Electronic Monitoring  
VMS

### Dockside Data Collection

Information about:  
Landings only  
Weights can be verified  
Samples can be collected

#### Self Reported

Hails  
Fish Tickets

Technology Options:  
Electronic Hails  
Electronic Fish Tickets  
Credit Card System

#### Independent Collection

Dockside Monitors  
Port Samplers  
Plant Audits

Technology Options:  
Electronic Landing Reports

# At-sea Monitoring

- More costly and challenging
- Access to unsorted catch
- Catch handling and sorting practices
- Discard enumeration, viability and handling
- Protected species interactions
- Gear characteristics and operation

# At-sea Strategies

- Hails (electronic)
- Fishing Logbooks (electronic)
- Observers
- Electronic Monitoring
- VMS
- Aerial surveys/surveillance

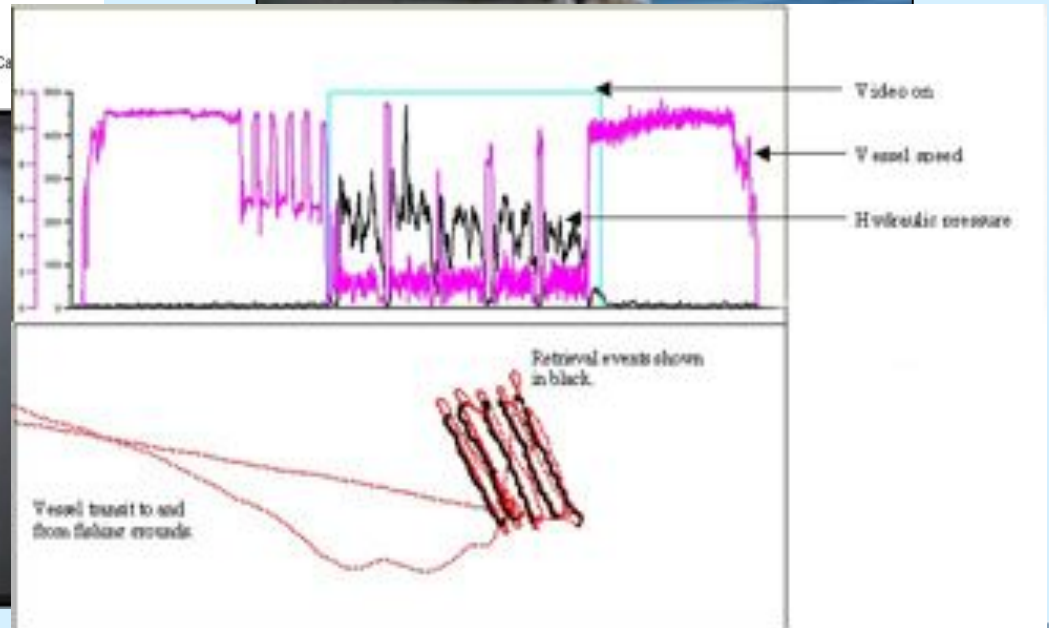
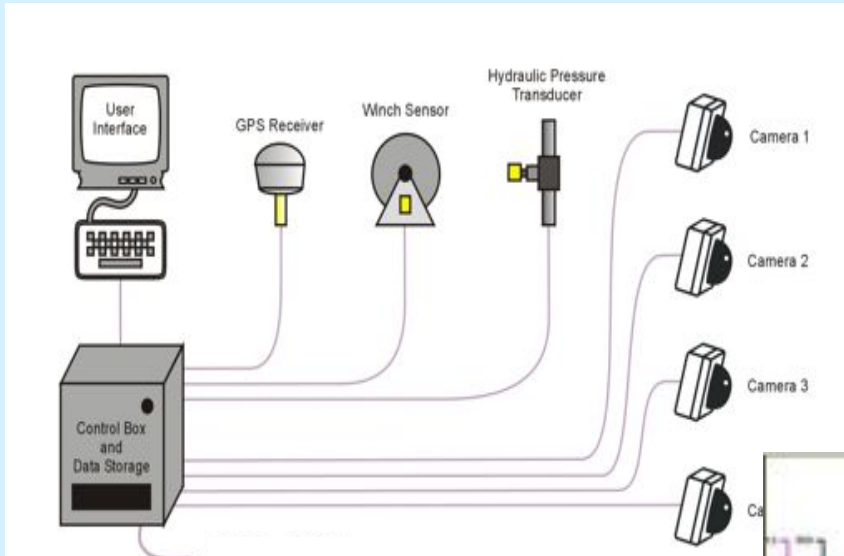


# Key Challenges with Observers

- Observer corps management
- Data quality control
- Safety and liability issues
- Vessel facilities, living conditions
- Gender
- Personalities
- Cost



# What is EM?



# Key Advantages of EM

- Not limited by vessel size
- Less impacted by irregular fishing schedules
- 24/7 data collection
- Less intrusive than observers
- Generally less costly than observer programs
- Can be used to audit self reported data





# Key Challenges with EM

- EM is not tamperproof
- Technology can fail
- Requires industry engagement
- Complex infrastructure requirements
- 2-3 year implementation timeline

# Dockside Monitoring

- Less costly than at-sea
- No detail re catch location
- Onboard processing, freezing
- No data on released catch or other interactions
- Opportunity to interview skipper
- Access to market information

# Dockside Strategies

- Fish Tickets (electronic)
- Dockside Observers
- Port Samplers
- Credit card quota tracking
- Mass balance audits
- Landings audits



# Self Reported vs. Independent

- Competing priorities
- Conflicting motivations (self incriminating)
- Low level of training, rigour & commitment

**versus**

- Single purpose with clear motivation
- Training, supervision, QA/QC
- Rigorous protocols, commitment to quality



# Government or Private Business

- Governments role?
- Industry coordination/representation
- Data confidentiality
- Cost effectiveness
- Who is funding
- Threat assessment
- Need for certification, standards and audit



# Multi vs. Single Service Provider

- Certification process and audit
- Intense price competition
- Data quality challenge multiplied
- Raise questions re data integrity

**versus**

- Periodic tender process
- Create stable business environment
- Consistency of service
- Build a profession



# Program Funding

- He/she who pays - says
- Co-funding options
- Cost recovery model design important
- What is the capacity of the fleet to pay?
- Equitability of cost distribution
- Cost efficiency of monitoring services
- Technology options



# Data Ownership

- Funding defines ownership
- Legal considerations
- Private or government collection
- Sensitivity of key information

# Coverage Levels

- Objectives
- Required spatial/temporal resolution
- Sampling design
- Fleet behaviour and accountability
- Rare critical events

# Infrastructure

Oh, and don't forget!

- Outreach
- Training and certification program
- Data forms
- Procedures manuals
- QA/QC processes
- Data system
- Program audit



# Post Implementation

Year one is just the beginning

- Program review
- Adapt and evolve



*Thanks!*