



# Electronic Monitoring Current Technology

EU Control Coalition

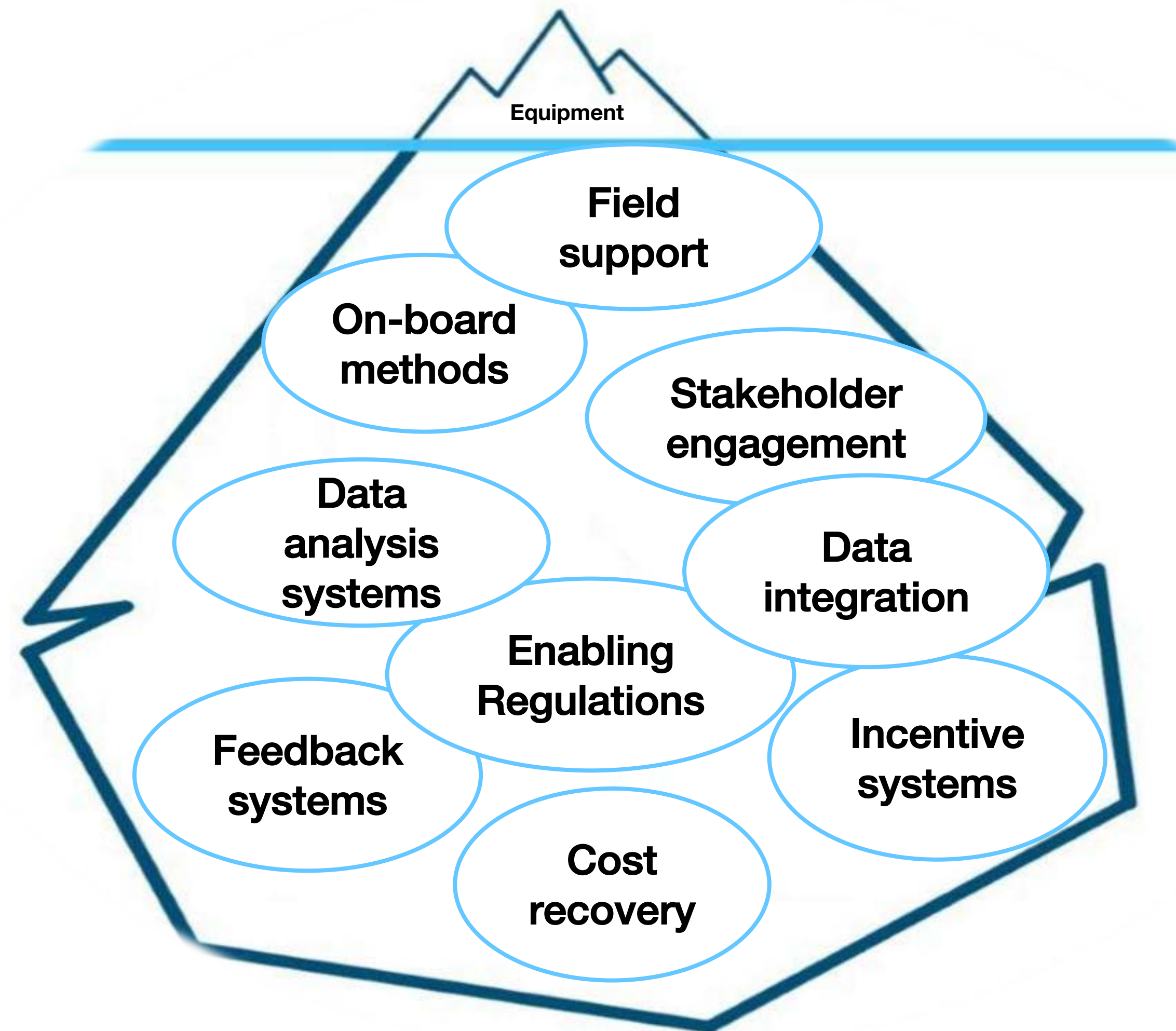
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# ARCHIPELAGO

- Over four decades helping the government, coastal communities, and industry regulators to implement sustainable practices through:
- **At-Sea and Dockside Observer Programs,**
- **Electronic Monitoring Technology,** and
- **Marine Environmental Services.**
- Services include coastal planning for commercial, industrial, and residential developments; monitoring and evaluating environment before, during, and after modifications to minimize disruptions in nearshore and offshore marine habitats.

# EM vs MY PRESENTATION





# ELECTRONIC MONITORING

Monitoring – Not Surveillance



# ELECTRONIC MONITORING

## Monitoring vs Surveillance

### MONITORING

- Defines what should be measured
- Values data and review
- Helps to modify behaviour
- Supports adaptive management and policy development

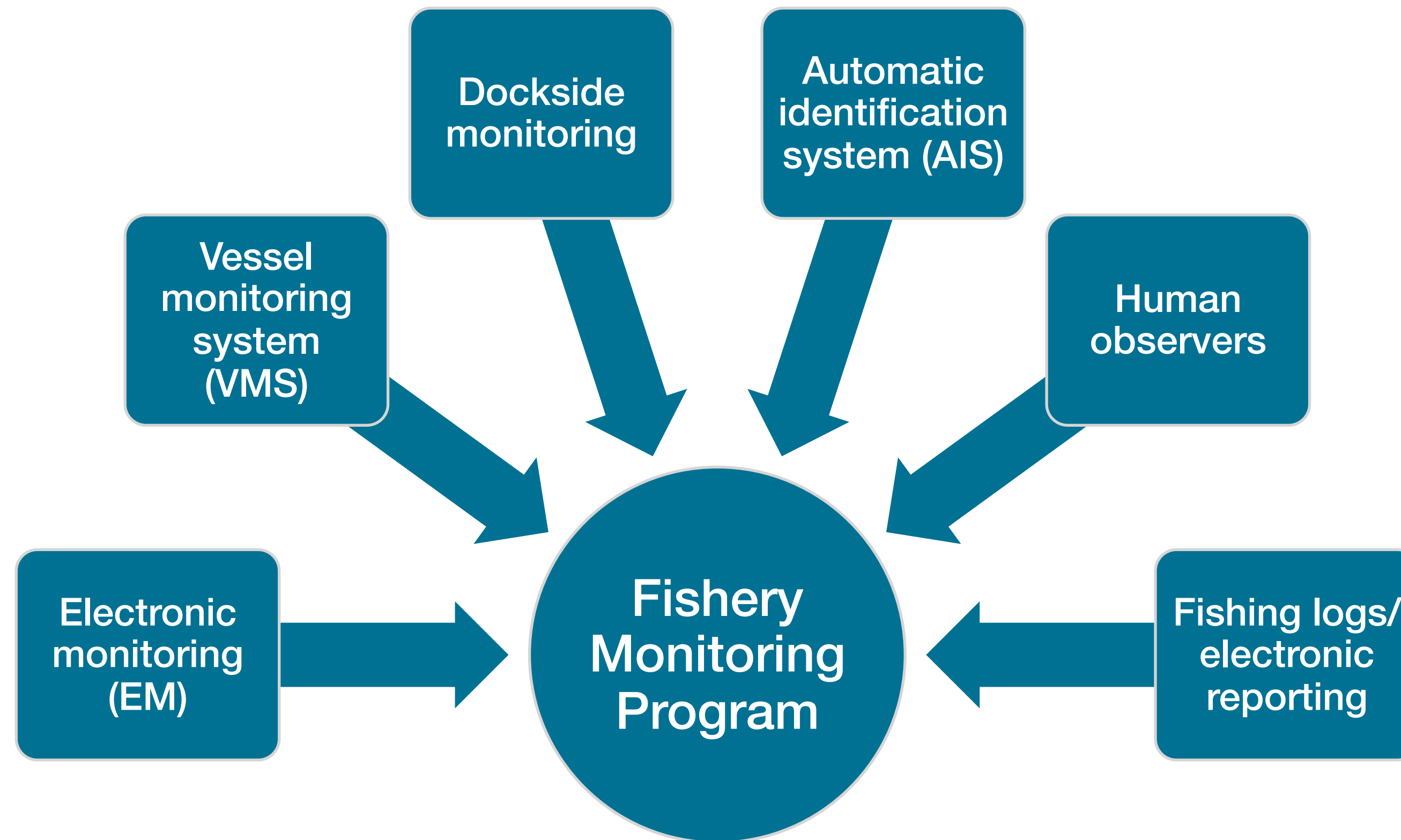
### SURVEILLANCE

- Little definition of what to measure
- Reactionary approach to abstract or missing requirements
- Enforcement values “catching violators”
- Used for deterrence

### EXAMPLES OF MONITORING

- Onboard observer programs
- Electronic monitoring programs
- Scientific surveys

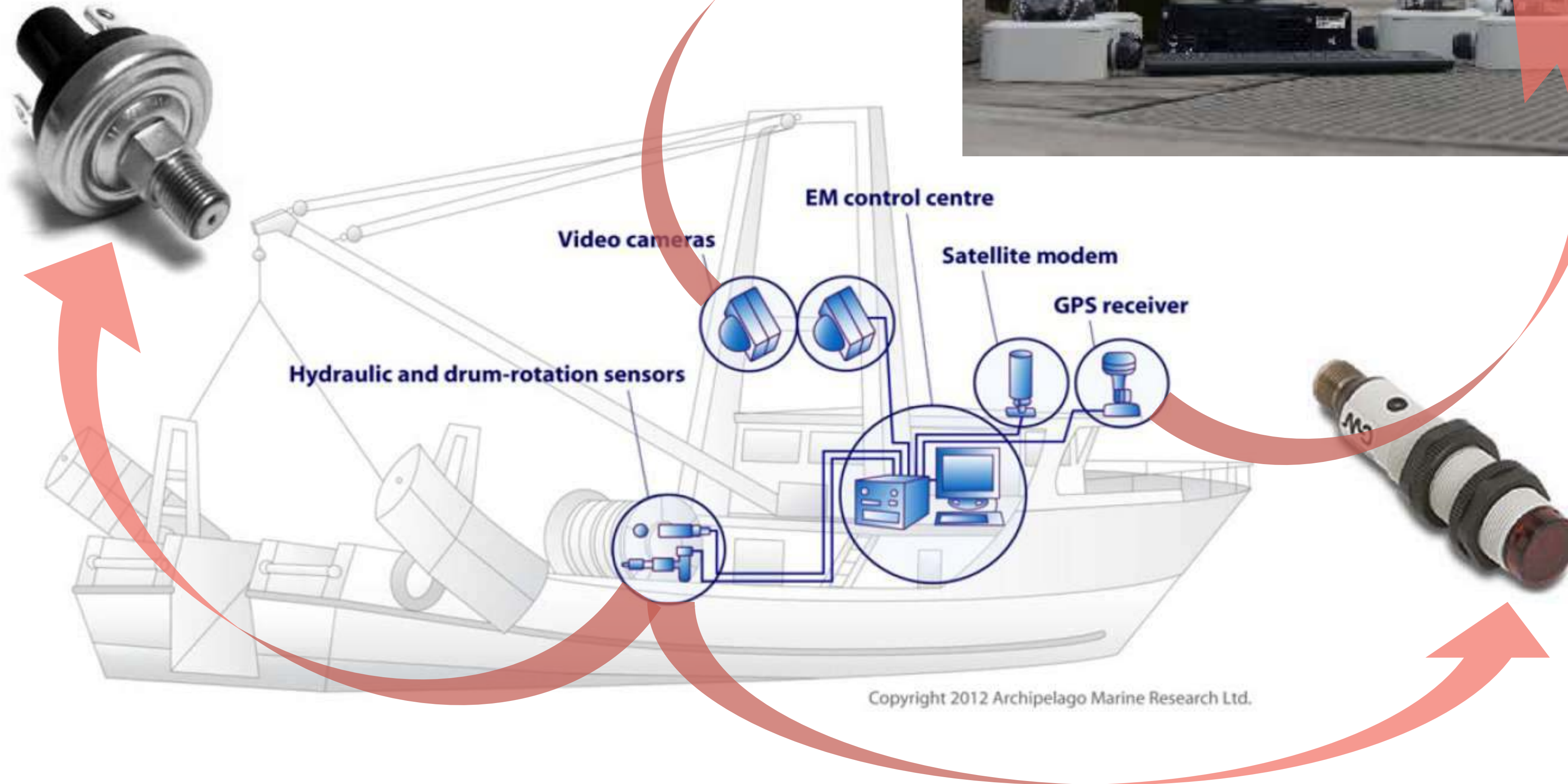
# ELECTRONIC MONITORING





# TECHNOLOGY HARDWARE

EM Observe





# TECHNOLOGY HARDWARE

## Important Requirements

- Ruggedized for marine environment
- Removable/uploadable data storage
- Power management
- Fault tolerance and tamper evident
- User interface with function testing
- Multiple camera and sensor inputs
- Multiple recording triggers
- High capacity data storage
- Data encryption



# TECHNOLOGY ONBOARD SOFTWARE





# TECHNOLOGY SHORESIDE SOFTWARE

EM Interpret





# BIG QUESTIONS TO ANSWER

- What about my small vessel?
- What about privacy?
- What about costs?
- Are these systems reliable?
- I have VMS/AIS, what is the need?



# VESSEL SIZE

125m Length



5m Length





# PRIVACY

- All fisheries monitoring data is considered confidential by law.
- Video data focuses on fish and fishing activities, not on people.
- Fishermen can typically see or request their data.



# COSTS

Who pays for what is important to decide.

## BC Fixed Gear

- Since 2006
- 180 boats, 7,500 days, 900 trips, 15,000 hauls
- Bycatch management
- \$180/sea day

## BC Whiting

- Since 2007
- 20-30 boats, 1,300 days, 500 trips, 1,100 hauls
- Bycatch management
- \$60/sea day

## BC Area A Crab

- Since 2000
- 50 boats
- Effort management
- \$75/sea day

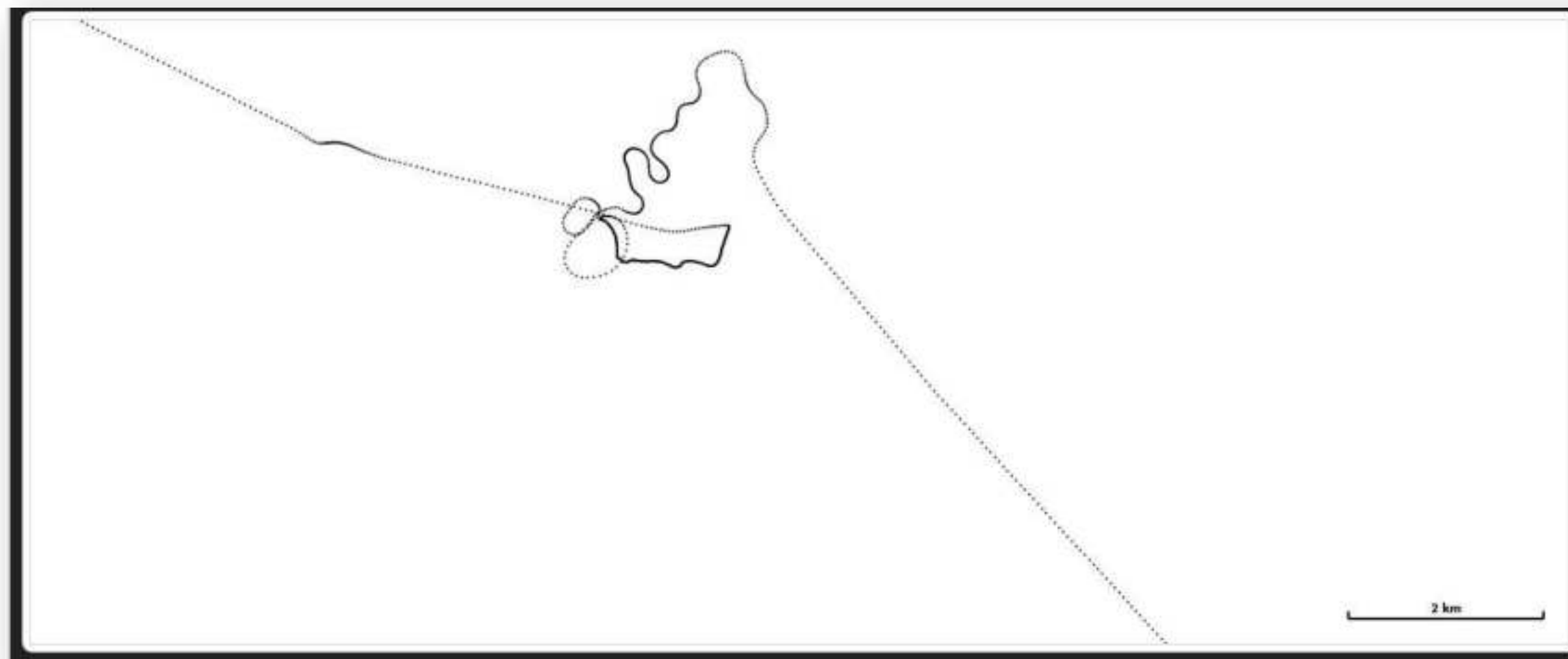
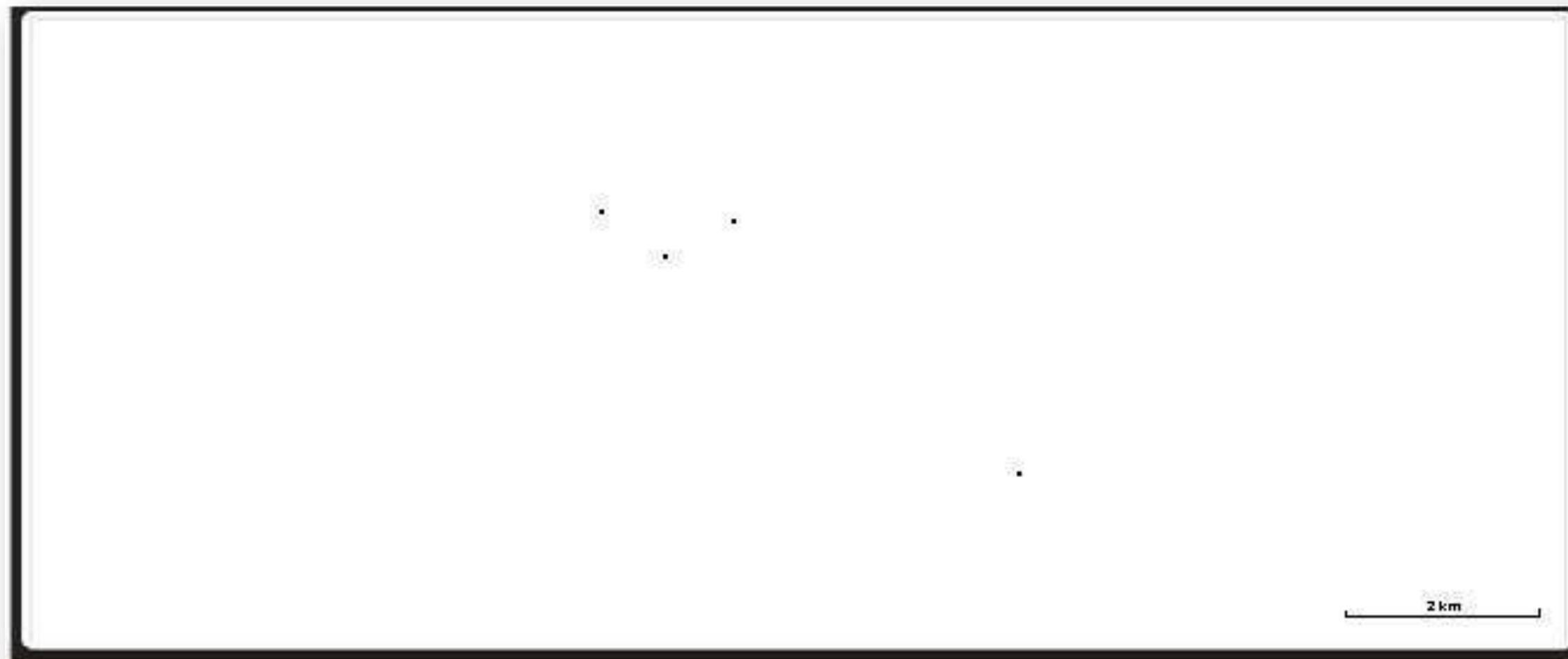
## AFMA

- Since 2014
- 80 boats, 12,500 days, 1800 trips
- Bycatch management
- \$75/sea day

Hardware only ~\$15/sea day



# VMS COMPARISON





# RELIABILITY

- BC fisheries are the only ones that require a return to port if essential parts of the EM system fail at sea.

2017 and 2018	Total (%)
EM Trips	3031
EM Seadays	16552
EM System Calls from Sea	127 (4.2%)
EM Issue Resolved In Port	23 (0.76%)



# CASE EXAMPLES

## Longline 10m – 30m

- BC/AK
- >200 vessels
- 14 years
- Data collection rates >98% each season



## Longline 50m +

- South Georgia and Ross Sea
- 10 vessels
- 6<sup>th</sup> year
- Data collection rates >98% each season

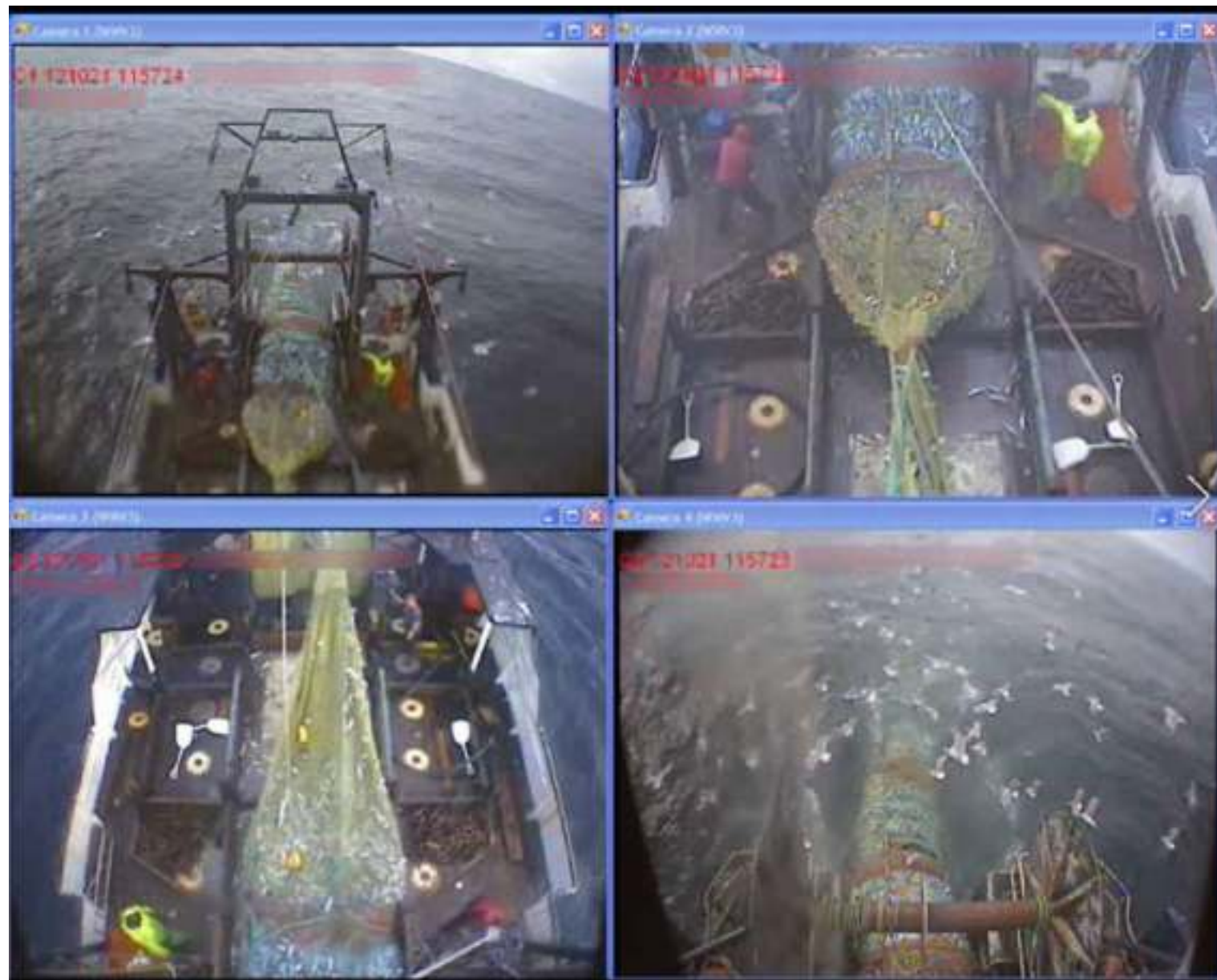




# CASE EXAMPLES

(slightly off topic)

Trawl 30m



Purse Seine 55m





# EM INNOVATION





# THANK YOU

Emily Langley & Jack Brett & the EU Fisheries Control Coalition for the opportunity to present today.

I'd like to also recognize our colleagues at Marine Instruments and at Barnacle Systems Inc.

