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Monitoring Initiatives

Supporting Sustainable Fisheries

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Table of Content

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Introduction

Global provider of marine resource management products and services. Serves Asia Pacific operations with a dedicated organization (AAP) and product engineering team (PE-Can) to deliver and support EM deployments at scale.

Vision

To Improve the sustainability of our natural resources for generations to come.

Mission

To collect and deliver data that informs sound decision-making for the health of our natural resources.

Established in **1978** in Victoria, BC, Canada.

100+ Team members across Canada, United States, and Australia

Pioneered Electronic Monitoring in 1999 **20+** years of EM experience and **75+** EM projects worldwide.

1,500+ EM systems deployed establishing more EM sea days than any other service provider.

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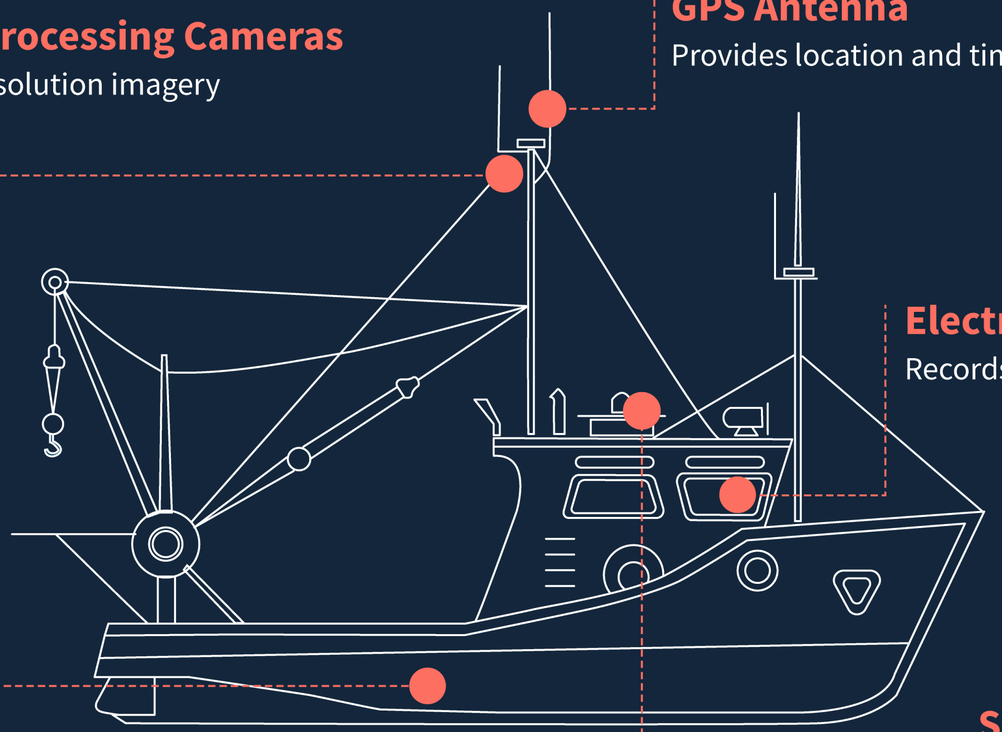
What is EM?



Catch and Processing Cameras
Capture high-resolution imagery

GPS Antenna
Provides location and time to track fishing activity

Electronic Monitoring Computer
Records video and vessel activity

Satellite Modem
Reports system status with hourly updates

Hydraulic and Rotation Sensors
Triggers video events and aids in fishing activity determination

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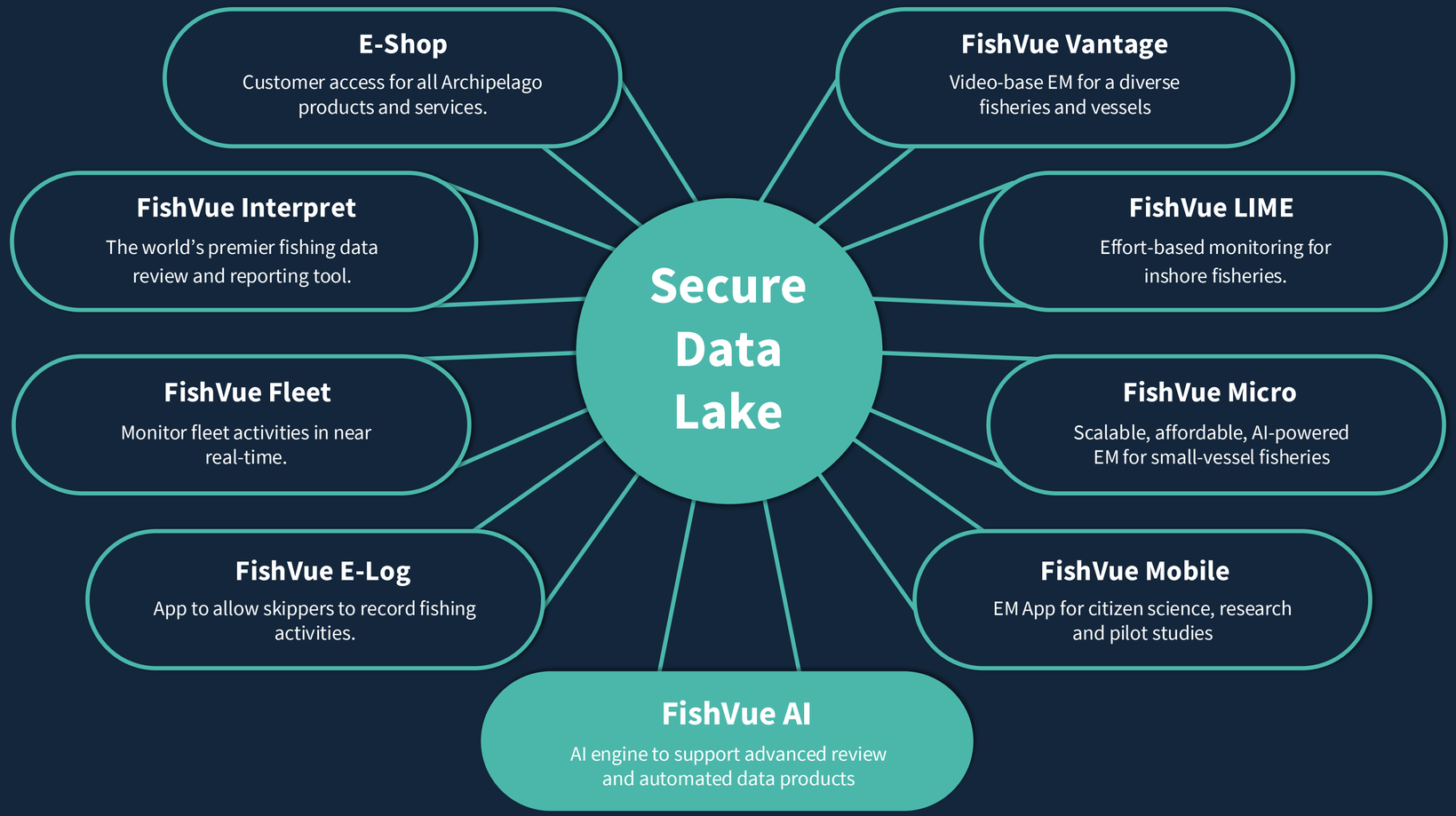
FishVue Product Ecosystem

Fisheries Management Simplified



Electronic Monitoring Devices

FishVue Mobile

Quickly gather data related to fishing activity and catch.

Video provides essential data on retained and discarded catch, plus catch handling.

FishVue LIME

Low-cost data collection that monitors effort-based fishery activities in real-time.

A minimal footprint makes it ideal for smaller vessels and large deployments.

FishVue Micro

Groundbreaking low cost intelligent and connected video EM system. Designed from the ground up to enable an entirely new category of at sea monitoring at a scale which was previously impossible.

FishVue Vantage

Flagship electronic monitoring (EM) system, collects multi camera video and sensor data across a variety of fisheries.

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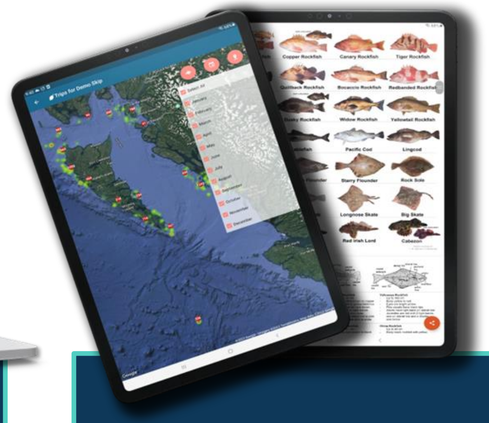
EM Software Products

FishVue FLEET

Fleet delivers actionable data from fishing vessels—live and historical—to support sustainable practices, ensure compliance, and streamline operations.



FishVue FLOAT

FishVue FLOAT is Archipelago's custom electronic fishing log application. Float allows vessel operators to enter and submit their fishing log information electronically.

FishVue Interpret

Interpret allows efficient review of video and sensor data to find important fishing events. Reviewers can follow vessel tracks, check gear use, and confirm retentions and discards. Efficient review workflows ensure cost-effective analysis

FishVue AI

AI based multi-step analysis model that sees fisheries data pass through numerous AI tools and then outputs into Archipelago's Interpret data analysis application.

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02

Science & Compliance

Why EM Matters

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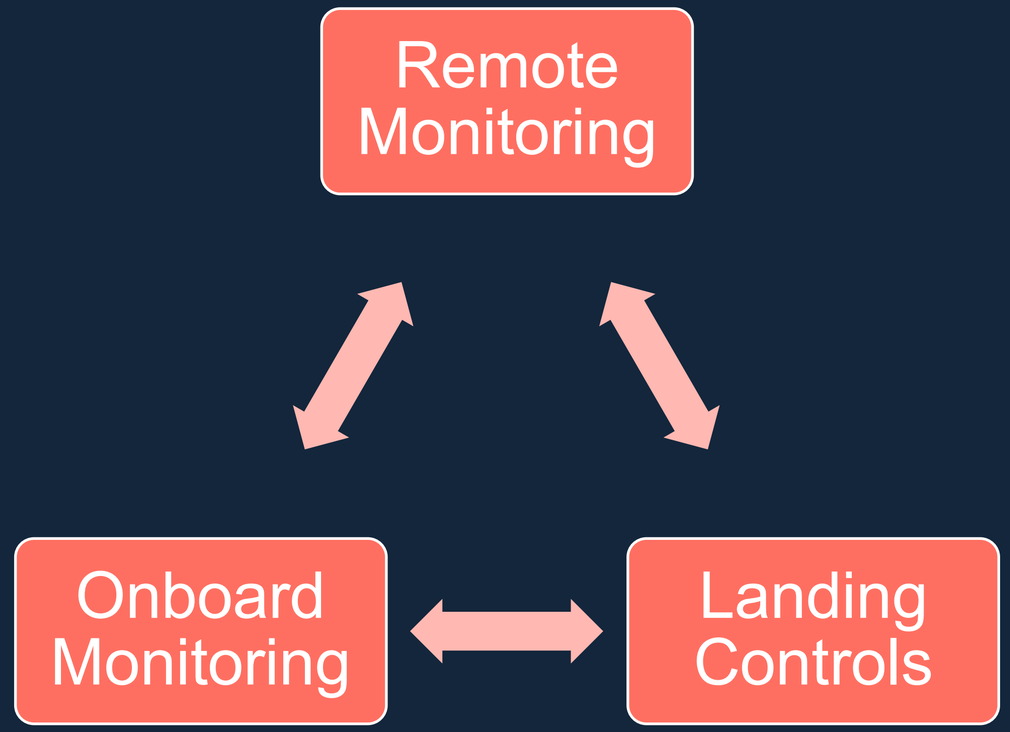
The Context Gap

Fisheries Surveillance Requires Context and Data

- Satellite systems can answer who is fishing and where, at unprecedented scale
- Landing and Market Controls (e.g. PSMA) provide traceability in the value chain

EM Offers a Scalable Ground-Truth

- Verifiable Fishing Effort
- Species Caught, Retained and Discarded
- Gear Deployment
- MARPOL and Transshipment
- Crew Welfare



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03

EM in Action

How Programs Work

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Program Spotlight (Australia)

Eastern Tuna and Billfish Fishery (ETBF)
Gillnet Hook and Trap (GHAT)

EM Drivers

At-Sea Discards

Discarded catch cannot be verified through landing inspections.

Observer Limitations

Observer coverage was costly and difficult to scale across dispersed fleets.

Logbook Validation

Need to independently verify fisher-reported catch and interactions.

ETP Risk

Longline and gillnet gear posed risks to protected species.

Social License

Independent monitoring improved confidence in responsible fishing practices.

Compliance

Limited patrol and inspection resources to meet MCS objectives

Products Deployed

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Program Structure

Comprehensive VMS

Mandatory VMS in all Commonwealth fisheries

Mandatory Logs

Daily shot-level reporting of effort and ETP interactions

Maritime Patrols

AFMA, Border Force and other agencies undertake IUU patrols

EM on High-Risk Sectors

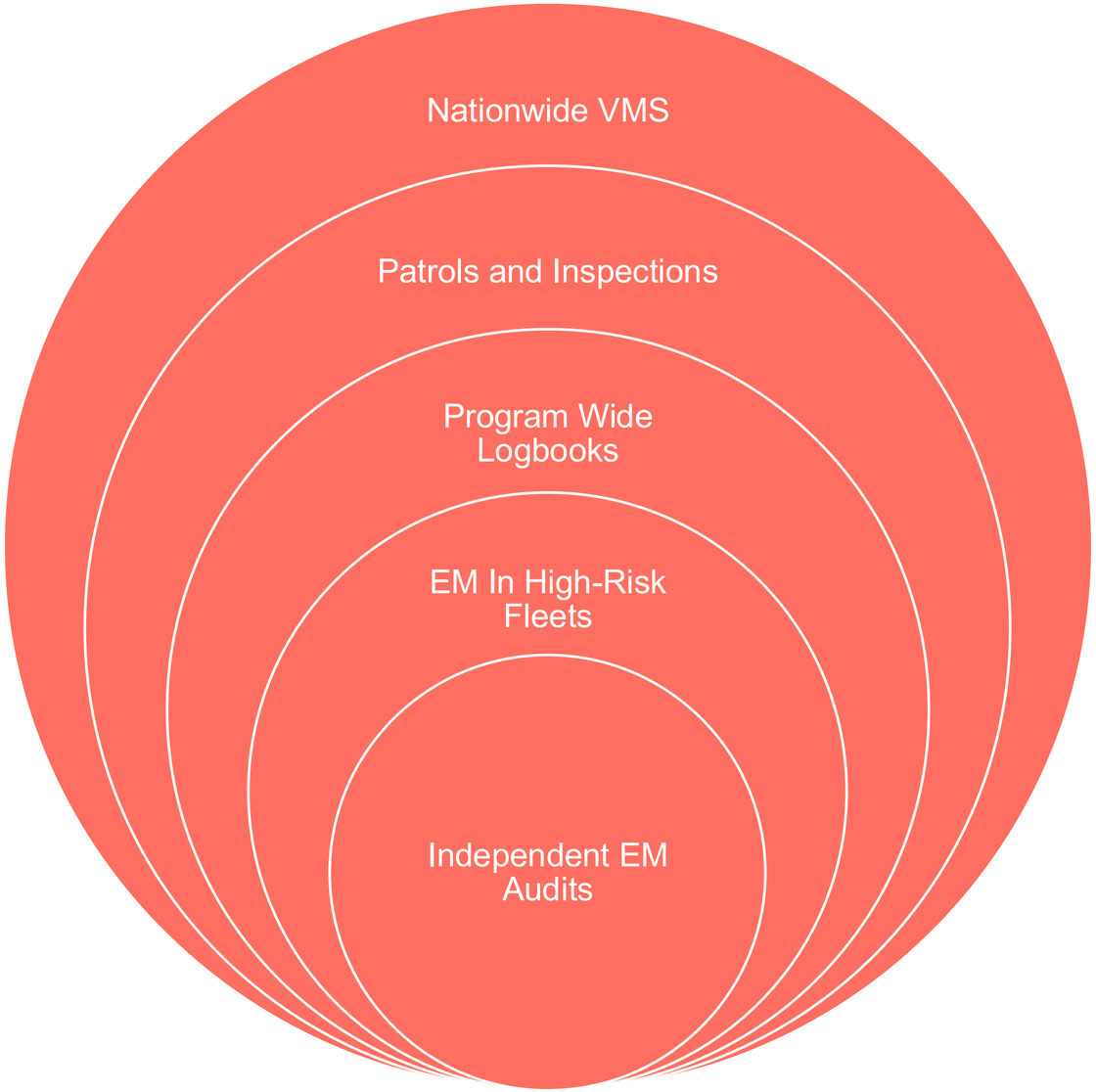
GHAT and ETBF Fisheries deemed high risk of ETP interaction, justifying EM

EM Audit

10% of events are audited against Logbook data

Independent Structure

Independent monitoring verifies fisher data collection



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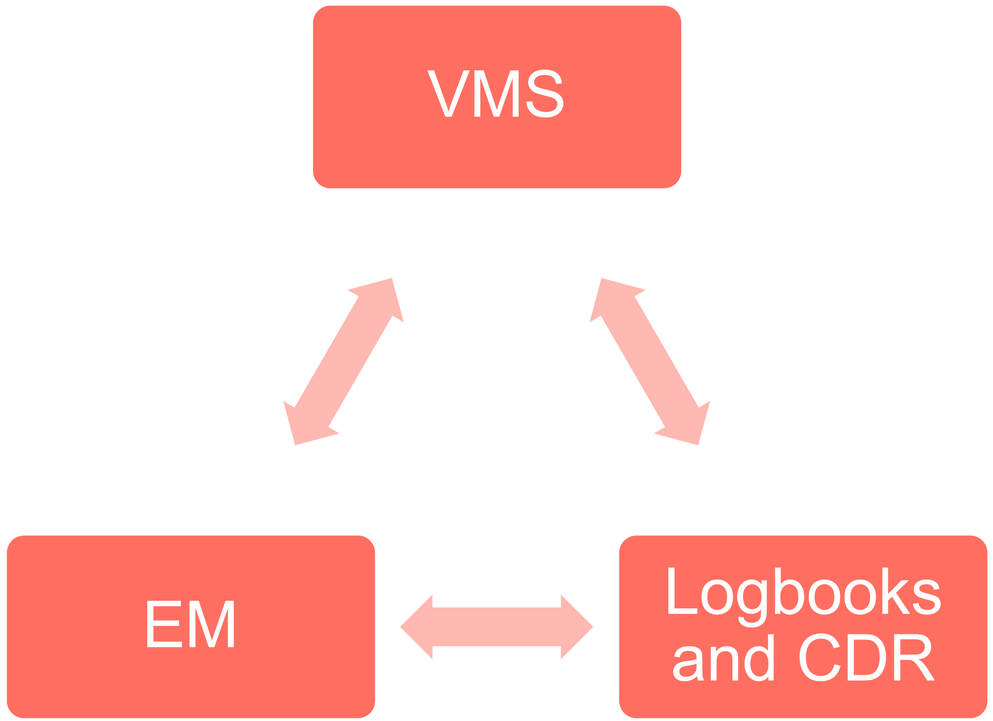
Program Successes



Logbook Accuracy

EM significantly improved self-reporting of protected species interactions.

Targeted Management

EM Coverage on high-risk fleets allowed improve compliance resourcing

Catch Composition

EM enabled verification of discard practices and investigation of potential high-grading

Risk Indicators

EM data enabled spatial and operational risk indicators through retrospective analysis.

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Program Spotlight (Canada)

Groundfish, Hook and Line, Trap Fishery (GHLCMP)

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EM Drivers

Compliance

Early concerns over high-seas transshipping and gear theft

Scalability

As fishing power grew, a scalable compliance solution was needed

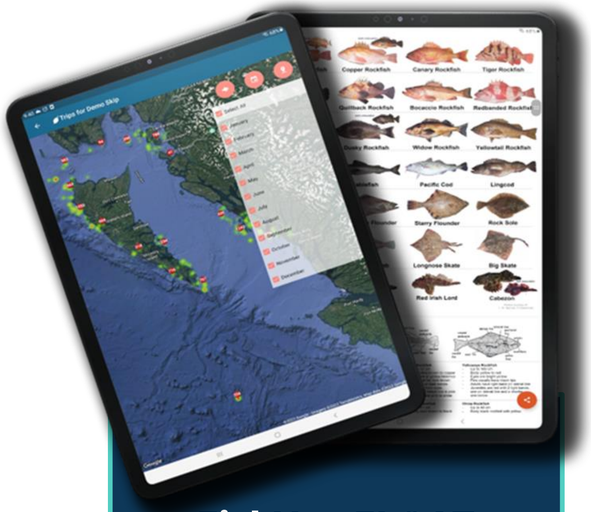
Catch Accounting

Discards at sea were not captured by dockside validation

Conservation

Yelloweye rockfish bycatch mortality became a major program driver

Products Deployed



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Program Structure

Transferrable Quotas

Limit catch while creating secondary markets

Mandatory Logs

Event- and Catch-level reporting of retained and discarded species

100% EM Coverage

All GHLCMP vessels carry EM systems, which must be functioning every trip

Dockside Validation

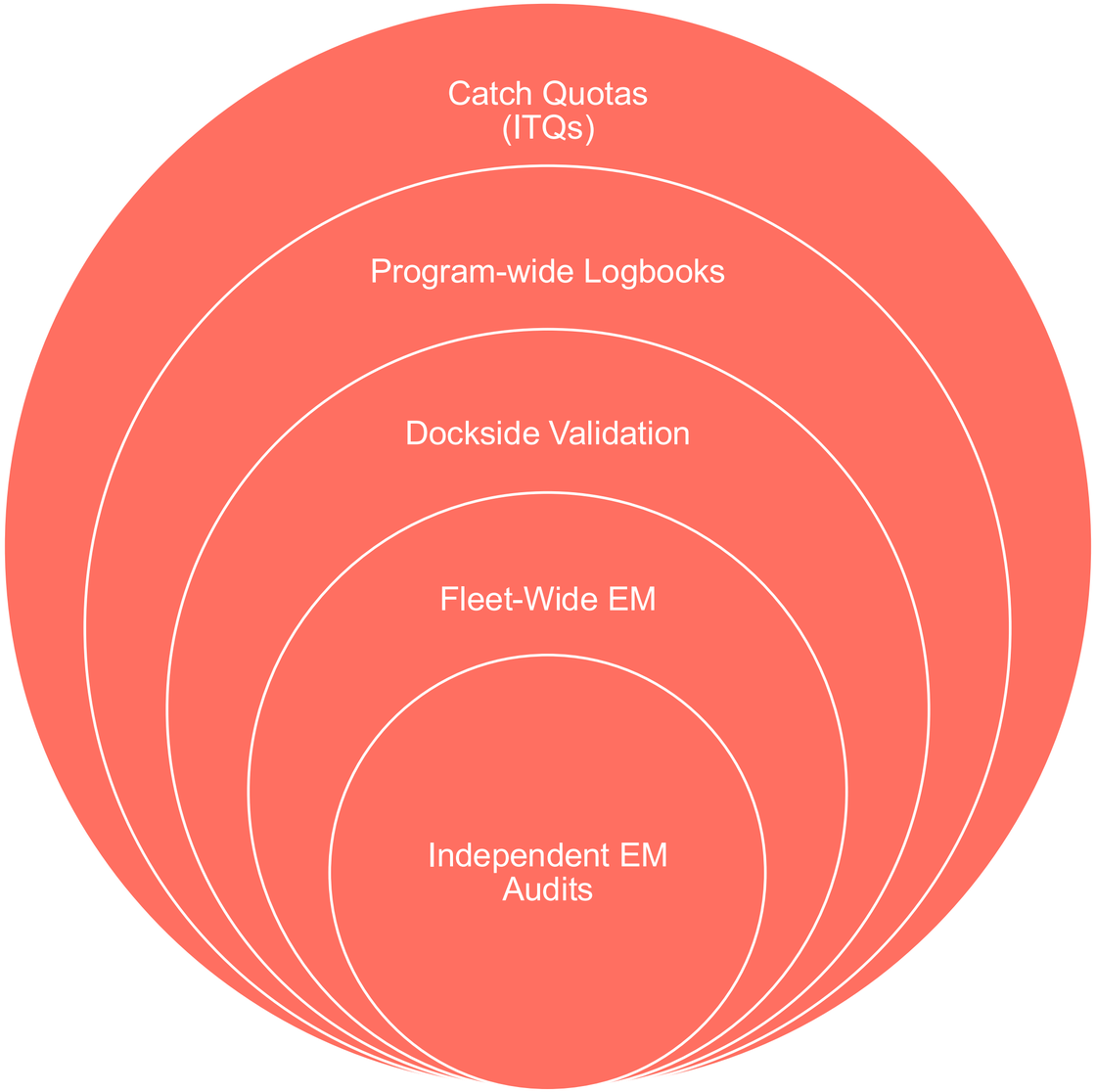
All landings monitored to provide an independent record of landed catch items.

EM Audit

10% of events are audited against both landing and logbook data

Independent Structure

Archipelago operates independently of both regulator and industry



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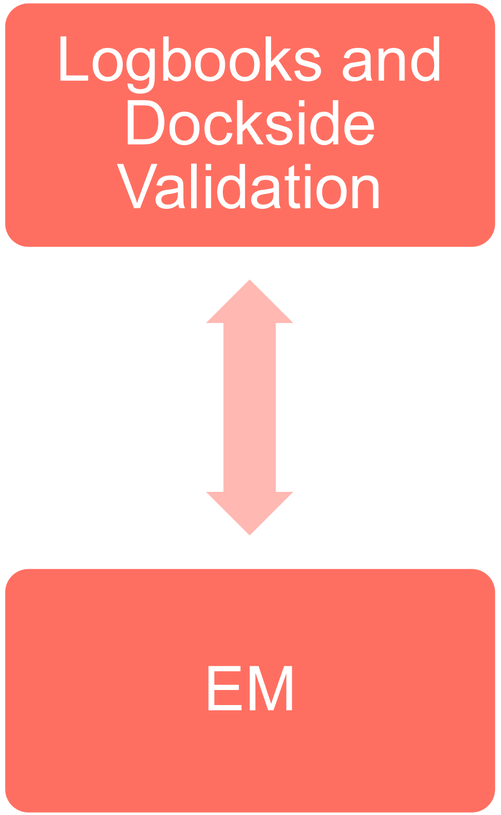

Full Catch Accountability

Traceability from catch to landing across EM, logbooks and dockside

Targeted Management

Accurate catch data enables species-specific management measures to develop over time

Catch Composition

Halibut catch changed dramatically as lower-risk practices adopted

Risk Indicators

EM enabled more effective compliance resource allocation

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Program Spotlight (Dungeness Crab)

Washington and California State Dungeness Crab

Program Drivers

Scalability

~1000 vessels across the Pacific Coast

Gear Conflicts

Gear theft a key program driver

Logbook Compliance

Existing logs either not submitted, or too coarse to be actionable

Marine Mammals

Additional drivers in whale entanglement mitigation

Marine Spatial Planning

Limited insights across large management areas and sparse reporting

Fishing Effort

Number of gear items and soak time not captured

Products Deployed

FishVue LIME

Low-cost data collection that monitors effort-based fishery activities in real-time.

Well suited to coastal fisheries.

FishVue FLEET

Fleet delivers actionable data from fishing vessels - live and historical – to support sustainable practices, ensure compliance, and streamline operations.

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Program Structure

Area-Based Management

Effort-limited management areas

Jurisdictional Collaboration

Data managed through Pacific States Marine Fisheries Commission for coordinated management

FishTix

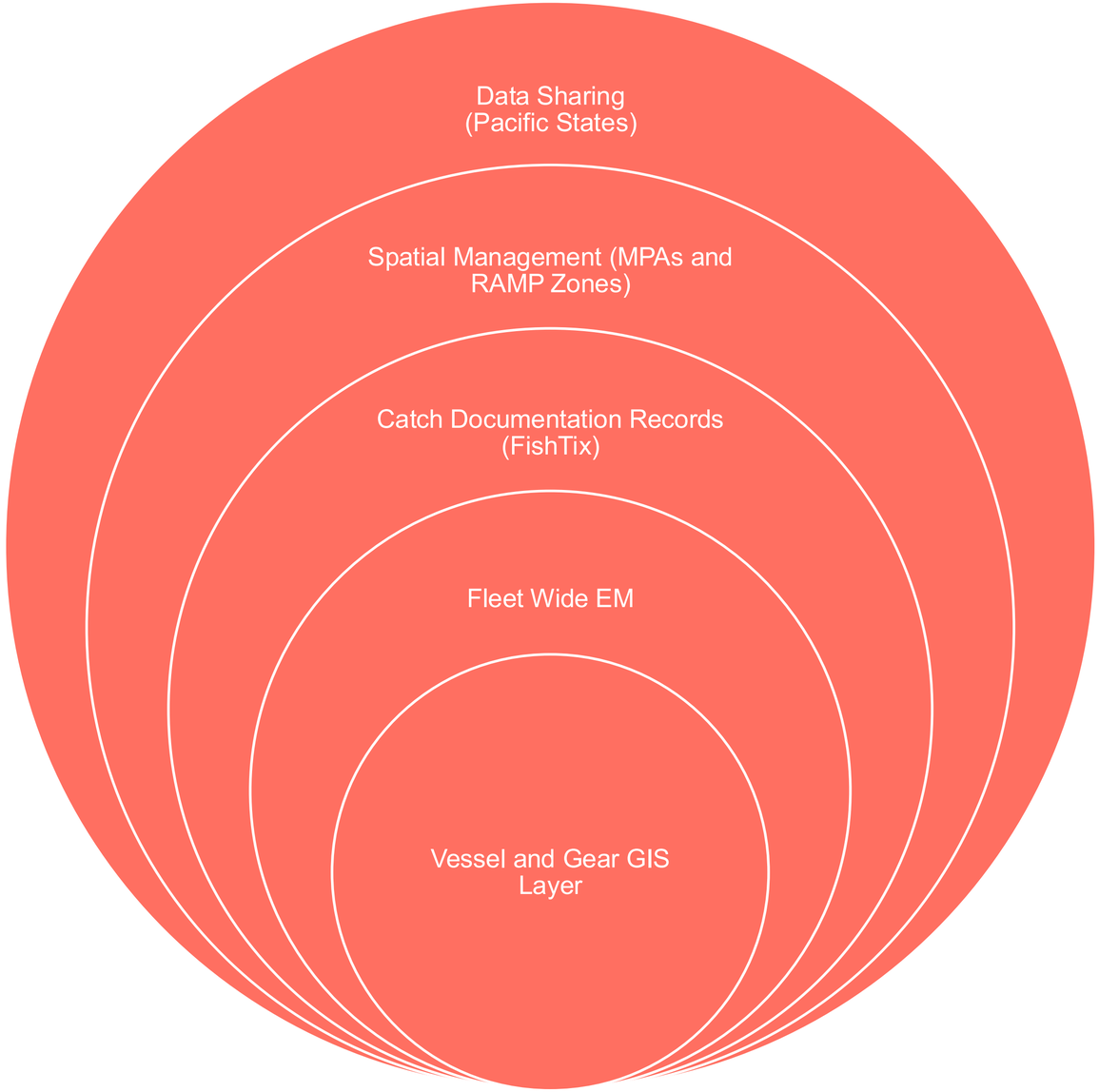
Landing declaration made by crab buyer

Skipper Install Model

Large-scale deployment required simplified deployment model

No Imagery

Video not required to meet management objectives



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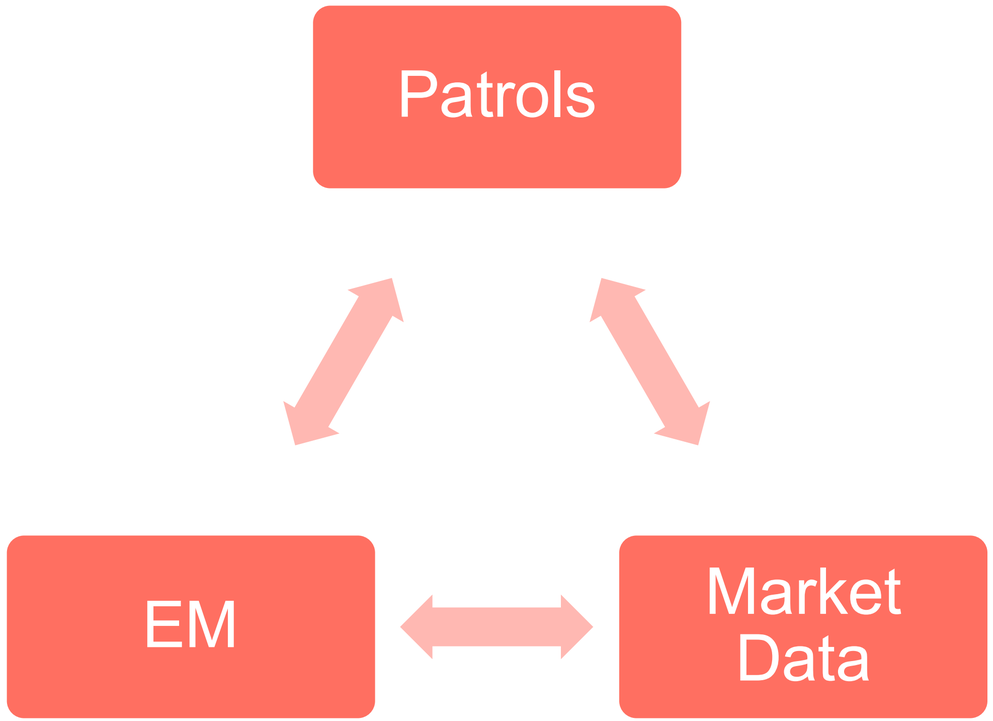
Program Successes



Transparency

Crews have access to their own EM data

Data Timeliness

Regulators access effort reports in real-time, compared to bi-weekly logbooks

Targeted Patrols

Compliance Officers use EM data to coordinate field officers in real time

Spatial Management

With better effort resolution, more precise area management reduces impact on fishers

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FISHVUEFLEET | chart

local time zone (utc-07:00)

485

positions | tracks | sensors

Favourites

- Alberto Miguel
- Ashburton Road
- Aurora Australis
- Australia Bay
- CFL Hunter
- Felix the Cat
- Makybe BJ
- Micava
- Noble Pearl
- Ocean Myst II
- Pachilan
- Savanah Gail
- Trinity III
- Yellow Fin
- Enterprise (AAP)

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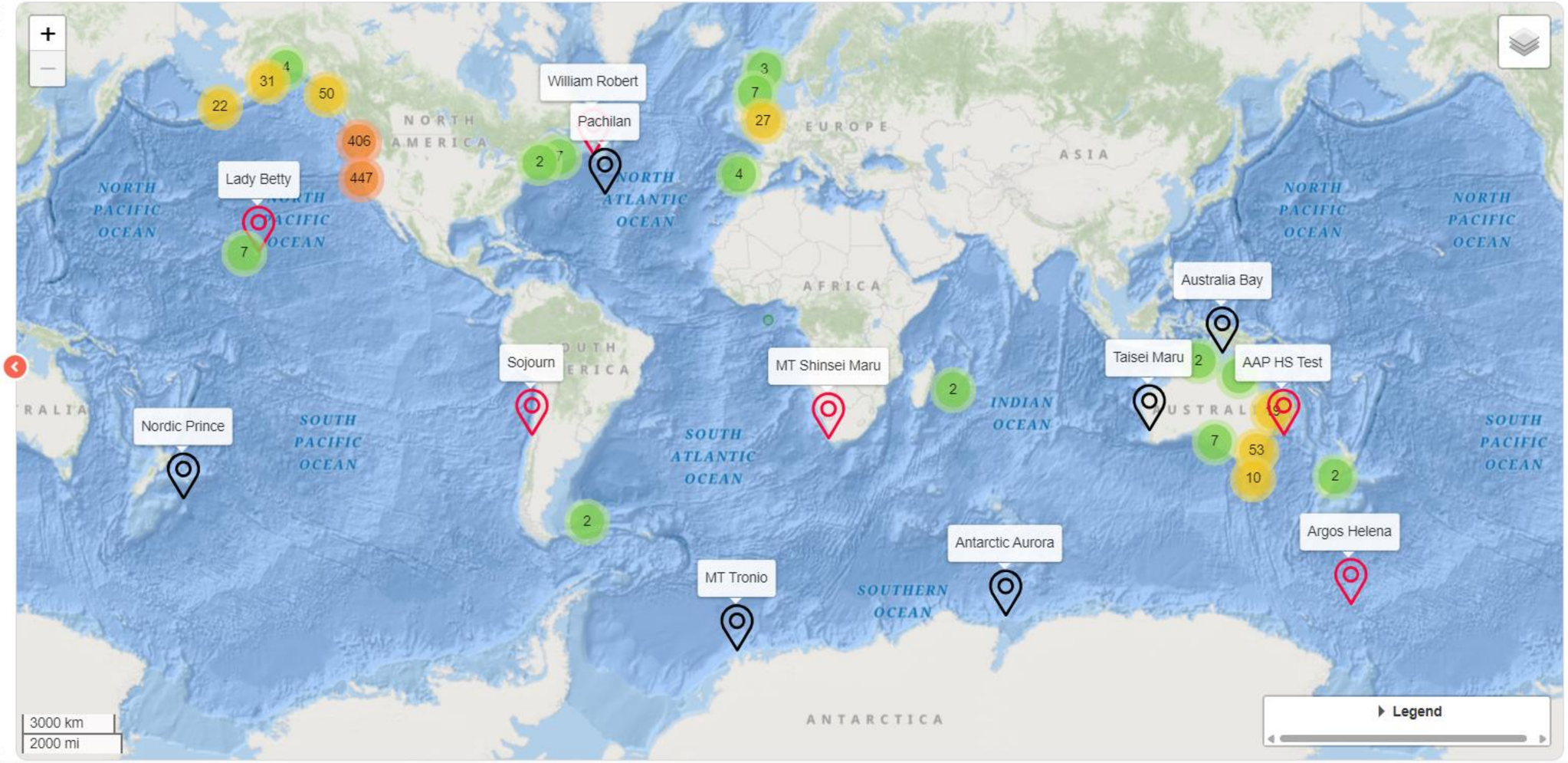

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04

New Tools

Operationalising AI

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AI-Assisted Review

Lowering Program Costs

- Fish-in-Frame Prioritisation
- Human-in-loop Deployment Model
- Sovereign Model Development

Improving Time to

- Identify Fishing Events
- Verify catch
- Issue Trip Reports

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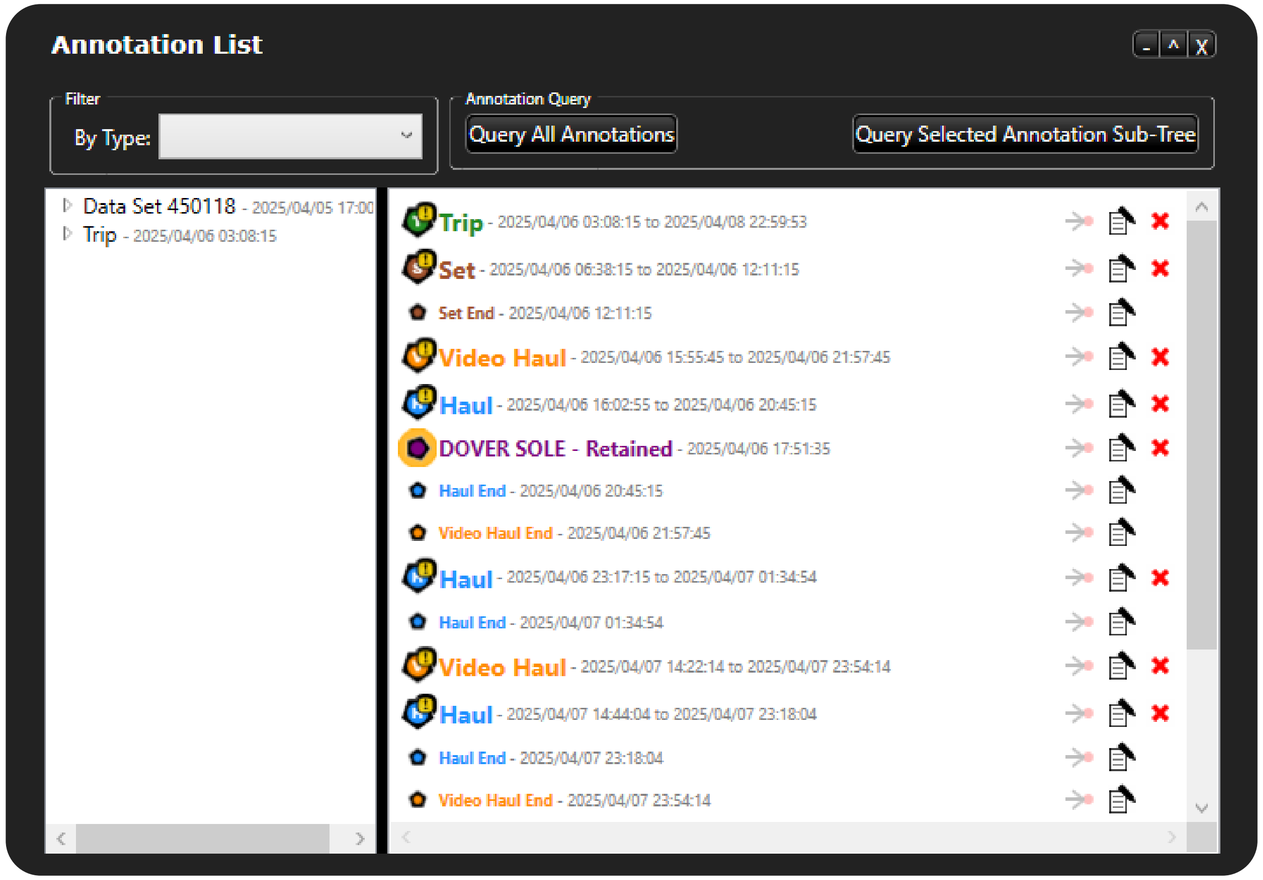
Defining ‘Review’



Audits

Verify data quality, consistency, and adherence to program rules

Trip Profiling

Characterize each trip (vessel, area, timing, gear, target fishery)

Fishing Gear Set & Haul Occurrences

Document when, where, and how each set and haul takes place

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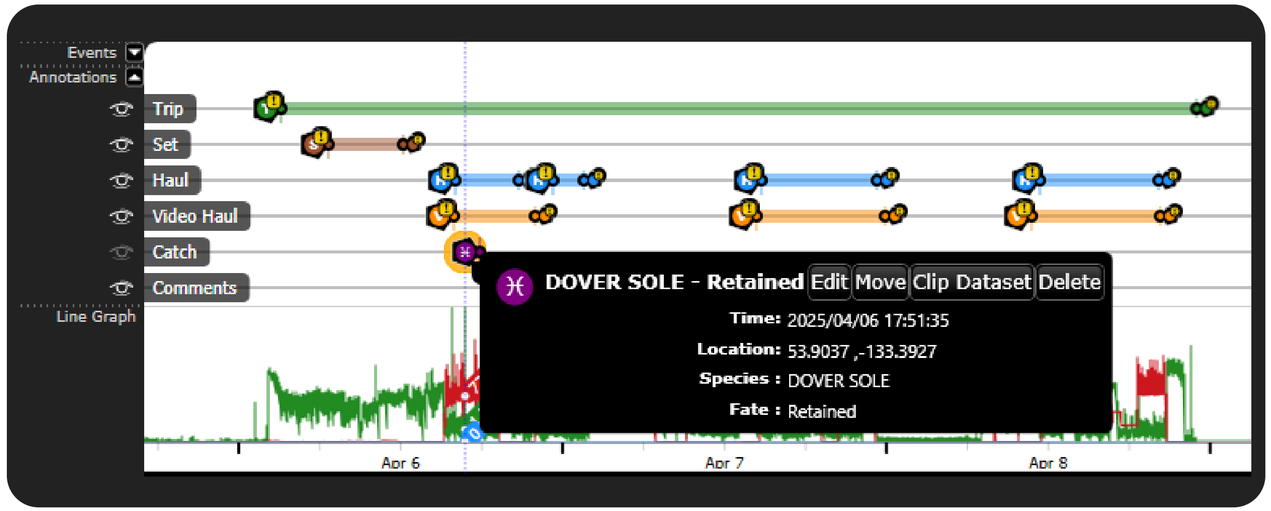
Defining ‘Review’



Handling

How fish are brought on board and managed

Sizing

Length / size measurements

Catch composition

Target species & bycatch

Fate

Kept, discarded, released, or lost

Sorting & Storage

How catch is sorted, binned, and stored

Counts

Number of individuals by species / category

Defining ‘Review’

Gear Monitoring

Counts

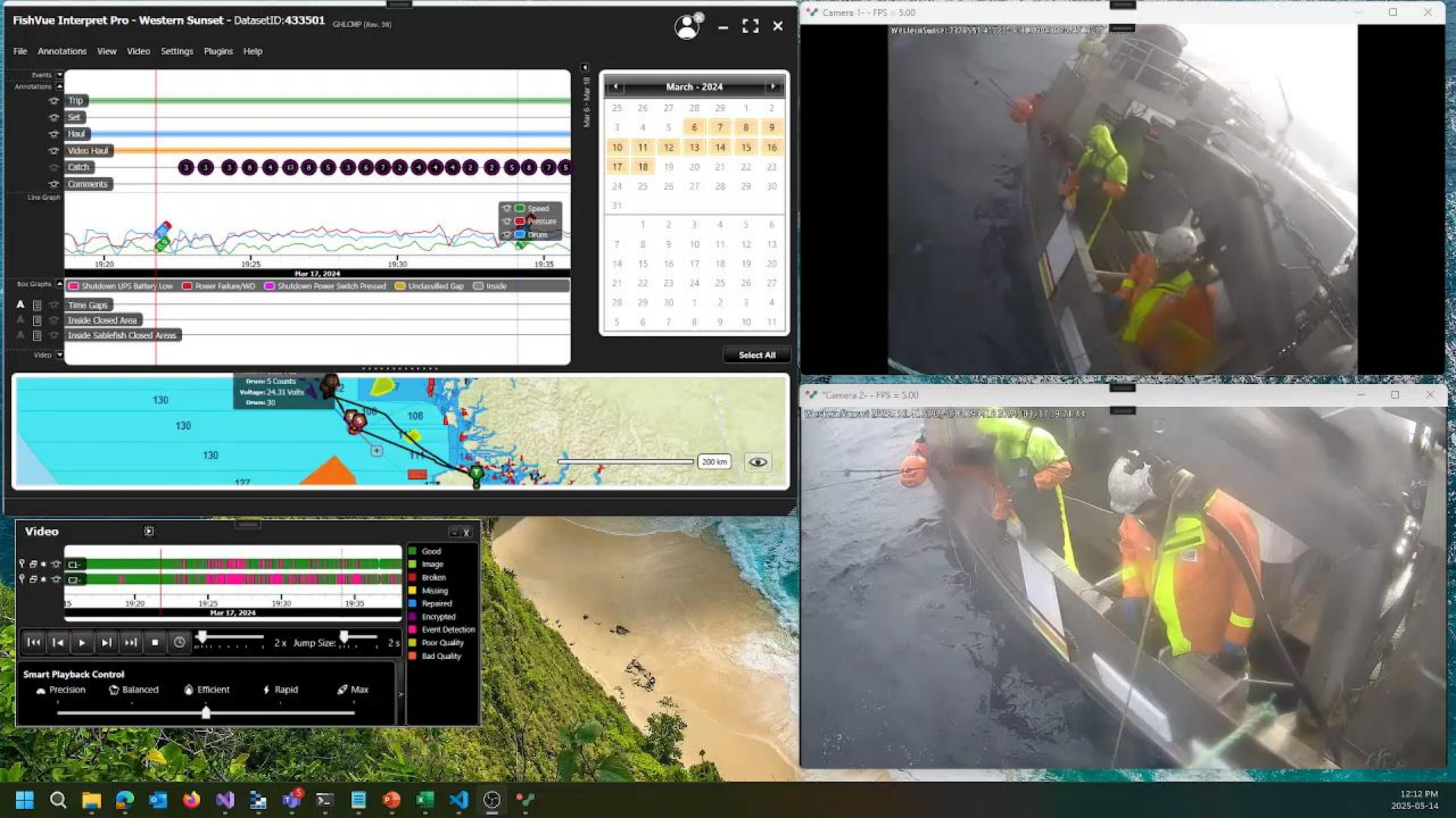
Number of hooks, pots, nets, or other gear units deployed

Compliance

Alignment with regulations and program requirements

CPUE

Catch Per Unit Effort is the catch relative to time and gear used


FishVue Interpret Pro - Western Sunset - DatasetID:433501
File Annotations View Video Settings Plugins Help
Trip
Set
Haul
Video Haul
Catch
Comments
Speed
Pressure
Drum
Mar 17, 2024
Shutdown UPS Battery Low
Power Failure/WD
Shutdown Power Switch Pressed
Unclassified Gap
Inside
Time Gaps
Inside Closed Area
Inside Sablefish Closed Areas
March - 2024
Select All
Drum: 5 Counts
Voltage: 24.31 Volts
Drum: 30
200 km
Camera 1- - FPS = 5.00
*Camera 2- - FPS = 5.00
Video
Good Image
Broken
Missing
Repaired
Encrypted
Event Detection
Poor Quality
Bad Quality
2 x
Jump Size:
2 s
Smart Playback Control
Precision
Balanced
Efficient
Rapid
Max
12:12 PM
2025-05-14

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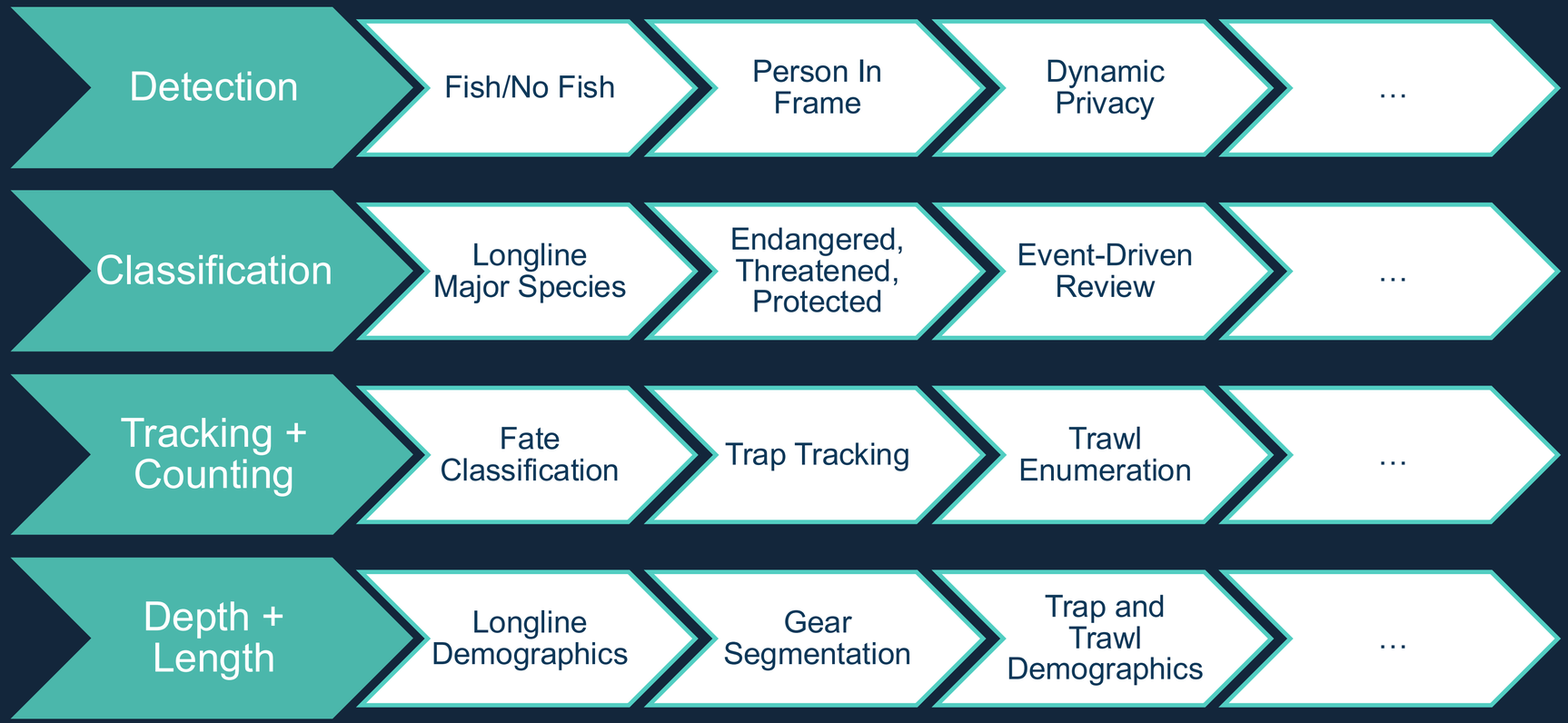
Model Classes



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Species Classification

Binary Species and Popular Species Classification

- Growing library of accurate species classification
- Rockfish Identification
- Sablefish differentiated from other fish
- Halibut, Tuna, Toothfish

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Anonymity and Trap

Privacy and Gear Tracking

- Human faces cropped out
- Some false positives but none on traps
- Active traps are followed with a high level of precision
- Stationary traps tracked independently

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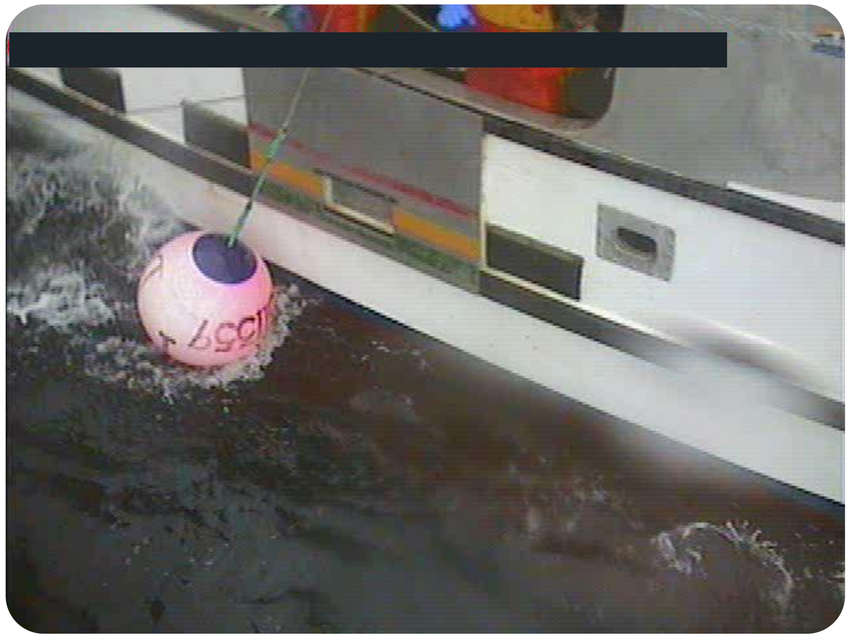
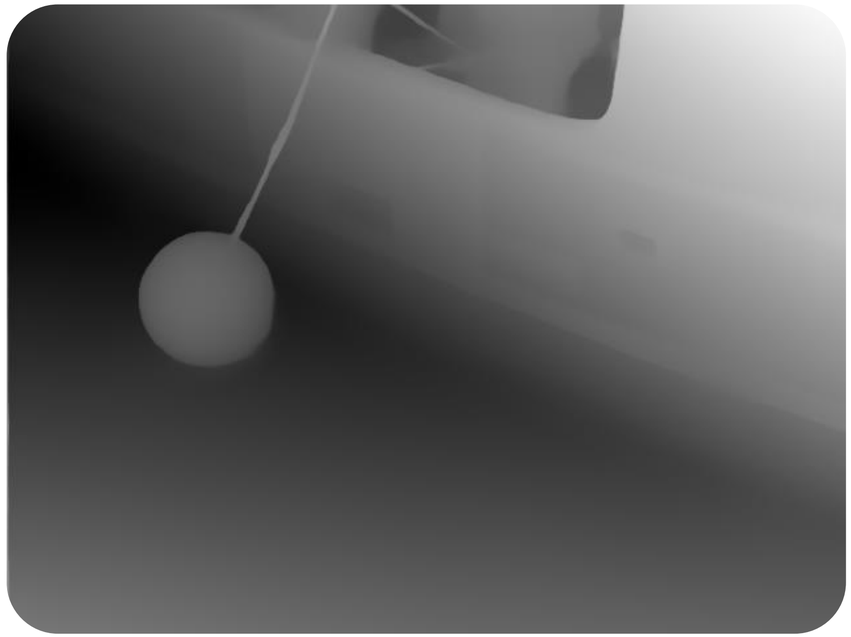
Monocular Length

Automated Length measurement with a single camera



Original Frame

Depth AI



Relative depth map

(lighter pixels are closer)

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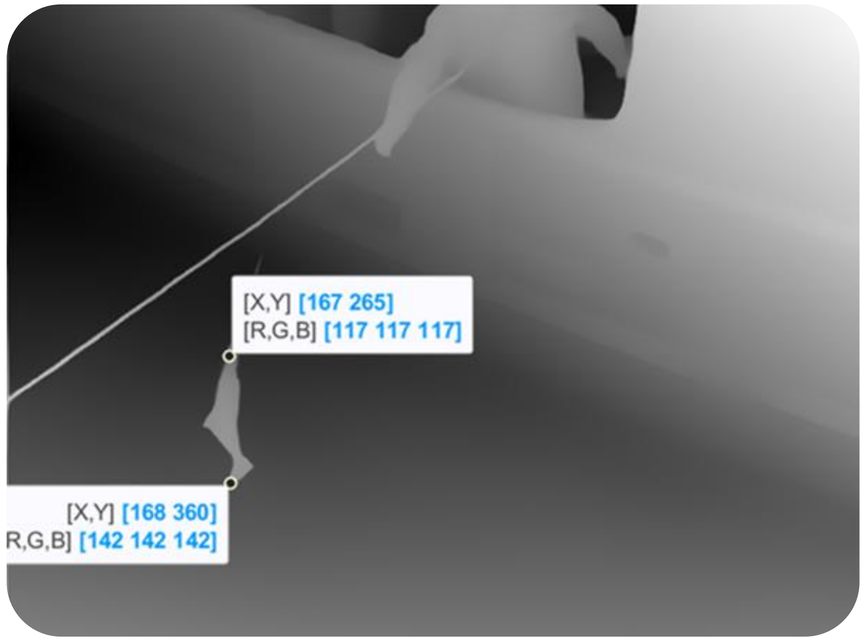
Monocular Length

Automated Length measurement with a single camera

Original Frame

Estimated fish length: 36 cm

Depth AI



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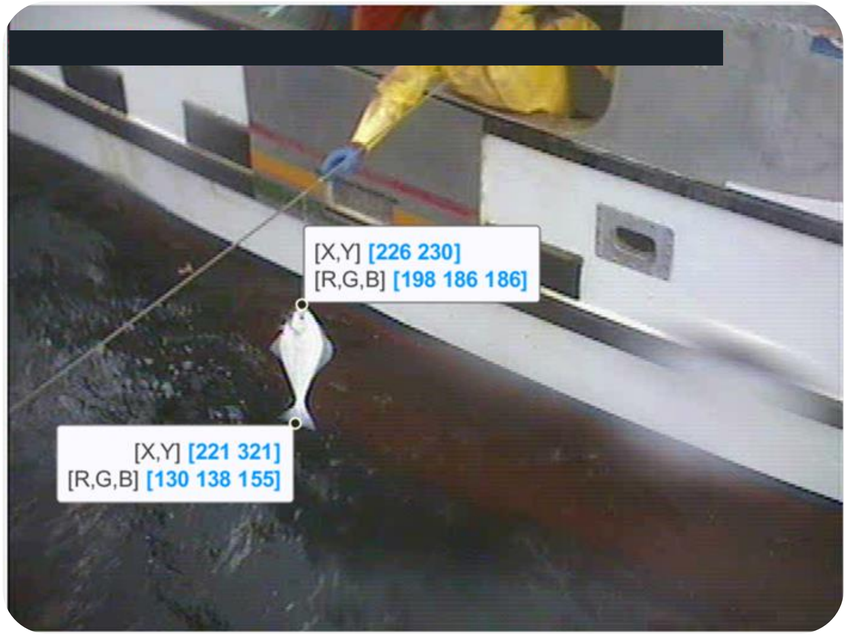
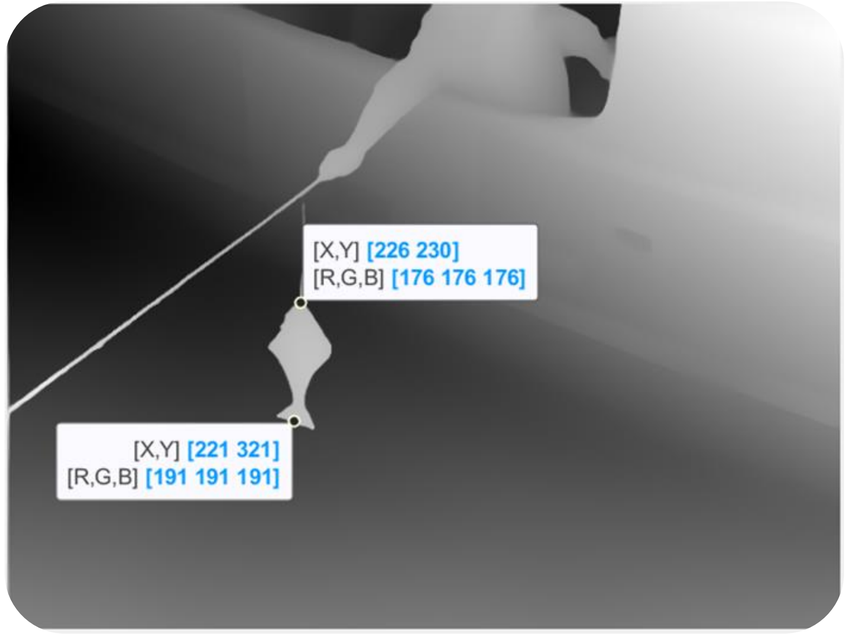
Automated Length measurement with a single camera



Depth AI



Original Frame

Estimated fish length: 35 cm

Relative depth map

(lighter pixels are closer)

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05

Lessons

For Program Designers

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Identify Context Gaps

Identify MCS Multipliers

Combine Technologies to Strengthen MCS Objectives

Seek Complementary Technologies

- Audit models ➔ Improve Log Accuracy
- EM Data ➔ Validates Remote Sensing

Risk-Based Enforcement

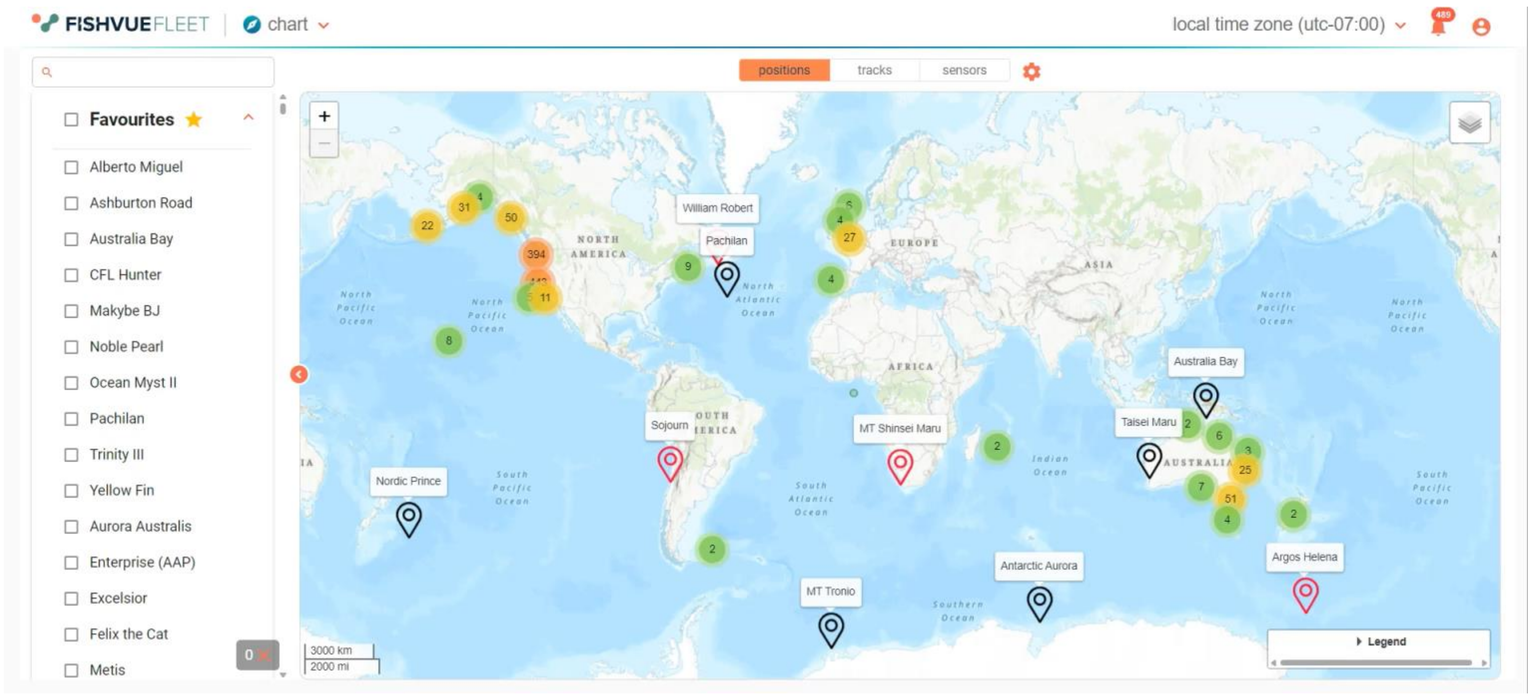
- Segment high-trust and high-risk vessels

Augmenting Dockside Validation

- Ensure bycatch and discard data feed into landing data

Ground-Truth Spatial Risk Indicators

- Strengthen evidence of spatial violations



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Integrate Data

Insights Demand Common Standards

Standardise Data Structures

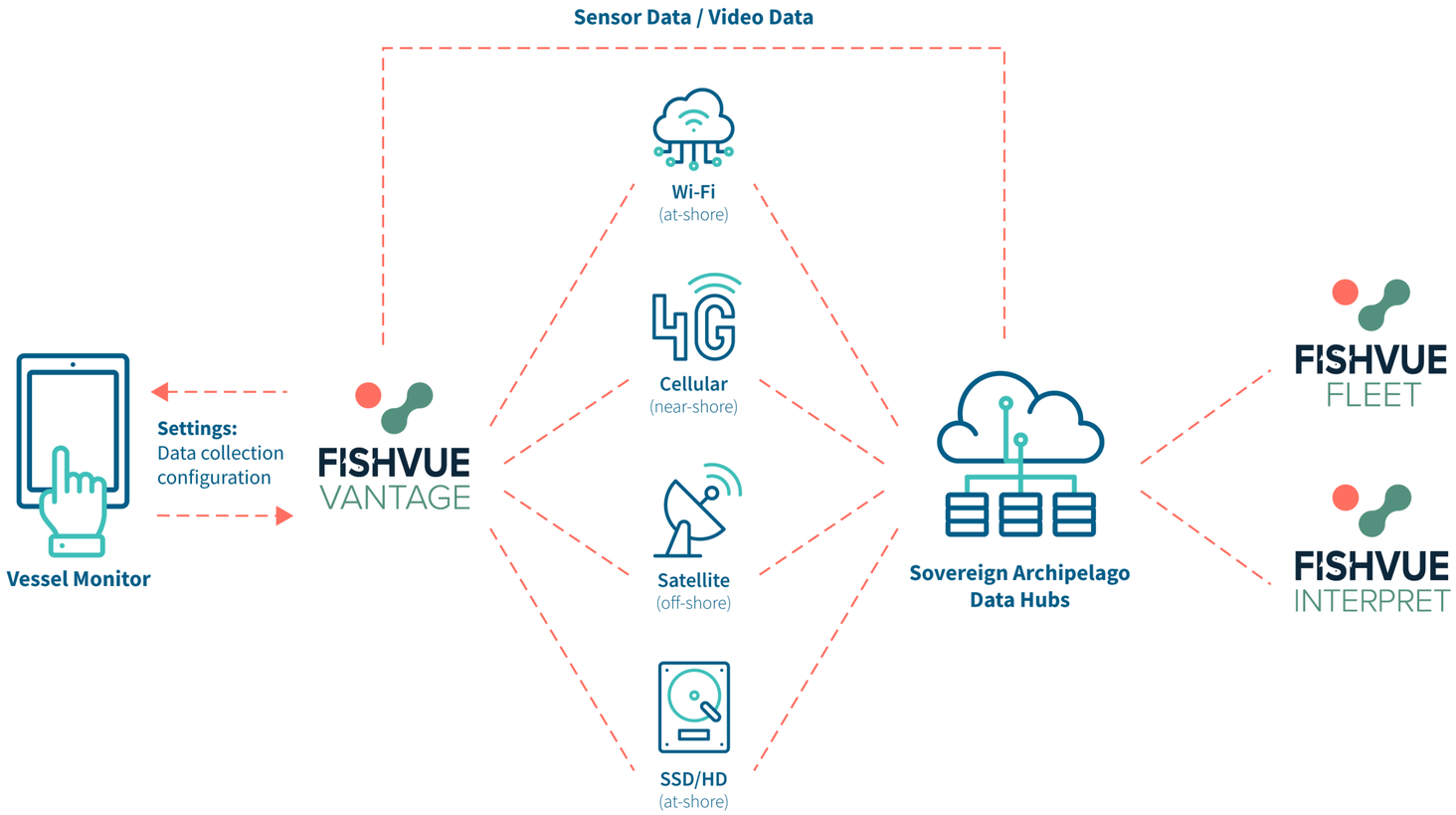
- Align data types across technologies to realise multiplier effects

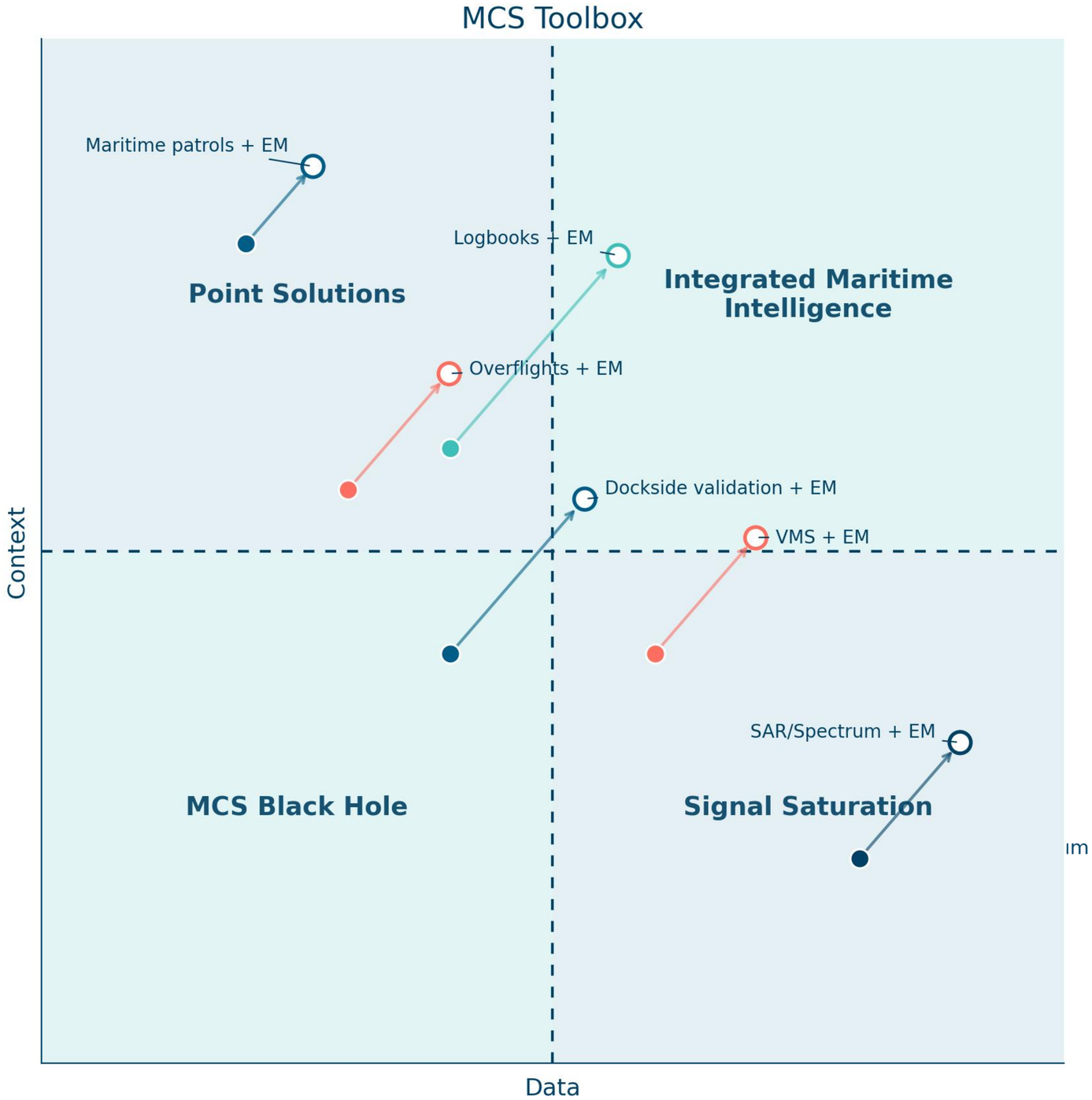
Partial Coverage Efficiencies

- Audit structures reduce ongoing cost while boosting integrity
- Apply EM insights to other positional data

Align Data Timeliness

- Seek out technologies that deliver insights at the same frequency to maximise awareness




MCS Toolbox
Maritime patrols + EM
Logbooks + EM
Point Solutions
Integrated Maritime Intelligence
Overflights + EM
Dockside validation + EM
VMS + EM
SAR/Spectrum + EM
MCS Black Hole
Signal Saturation
Context
Data

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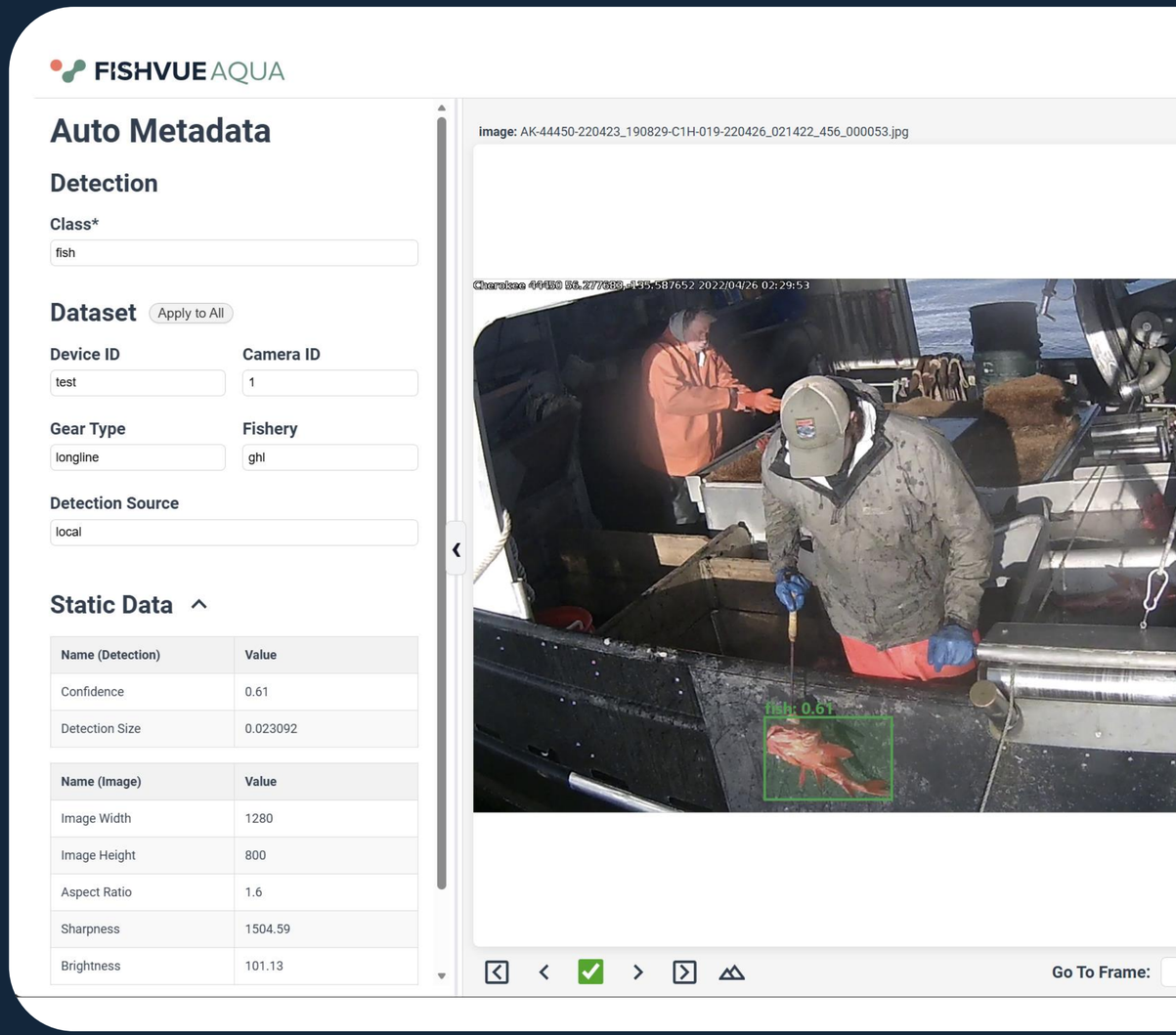
Prioritise Sovereignty

Develop Local Review and Training

- Identify tools that enable existing staff to train advanced models
- Partner with universities and NGOs to build review capacity
- Protect your fishing data

Address Local Needs

- Local data review staff understand local practices
- Develop high-skilled roles to support fisheries sector
- Train models on species native to your waters
- Drive value for your fishing industry



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THANK YOU

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