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COASTAL TECHNOLOGIES

STEERING MARITIME DATA INTO THE FUTURE



SEBASTIAN BERG

Director: Product Development

SHIFT COASTAL  
TECHNOLOGIES

# Company Snapshot

Shift Coastal Technologies builds ultralight dual-use marine robotic systems UxM/ASV for the Maritime Security and Environmental Monitoring markets.

With over 120 years of combined engineering, and marine robotics experience in the coastal technology and maritime sector.

Shift is approved for non competitive contracting with Government of Canada.



SHIFT

# Coastal Technology Stack

**PLATFORMS:** OceanSled Series ASVs designed for nearshore multi-mission operation, A multitude of onboard sensors, large payload capacity and connectivity options provides an ideal platform for surface and subsurface operations. COTS aerial drone packages are integrated with the system.

**DATA UNIFICATION:** Our proprietary software brings together data from Aerial, Surface, and Sub-surface sensors into a common platform. A highly capable Field Control Station is offered, with up to three screens to display and manage various real-time data types, while operating OceanSled ASVs.

**CIMS CLOUD PLATFORM:** CiMS Cloud Platform provides web based operating picture, with live sensor feeds from all connected platforms and sensors. Remote stakeholders and decisionmakers are able to see data faster, and directly influence operations through the platform.



SHIFT COASTAL TECHNOLOGIES

# Canadian Innovation for a Safer, More Secure Maritime World



CIMS DASHBOARD



FIELD CONTROL STATION





# Canadian Coast Guard



## MILESTONE

Shift has recently delivered the first USV to be owned and operated by the Canadian Coast Guard. This is a full CiMS delivery including control station and aerial systems. The system for CCG includes payloads focused on environmental response and search and rescue. The broader ISR capabilities of the vessel, control station and aerial systems are being brought into the Coast Guard workflow. The technology has been formally tested and evaluated by the coast guard and has met or exceeded all criteria tested to date.

# CiMS MARITIME FORCE MULTIPLIER

Real Time Data and Communication

Rapid, Scalable Deployment

Over/Under Surface ISR Capabilities



**TACTICAL COMMAND VESSEL**

Manned vessel receives real time data from front-line OceanSleds



**FLEET/JOINT COMMAND HQ**



**TACTICAL COMMAND POST**



**OS3**  
Support Manned Operation



**OS2**  
Deter and Dissuade Bad Actors



**OS1**  
Collect Actionable Intelligence



**MARITIME INTEREST ITEM**

FRIENDLY TERRITORY

HIGH RISK AREA

# WHY CONSIDER A Unmanned Aerial Vehicle?

## MULTI ROTOR

- Agile
- Great commercial availability
- Easy to learn
- Limited Battery power
- Limited Payload
- Limited weather window

## FIXED WING

- Longer Flight distance
- Fast movement
- Higher difficulty
- Limited weather window



WHY CONSIDER A

# Marine Autonomous Surface Ship?



## ADVANTAGES OF MASS

- Easier to increase power and payload
- Persistent monitoring
- Wide operating window

## LIMITATIONS OF MASS

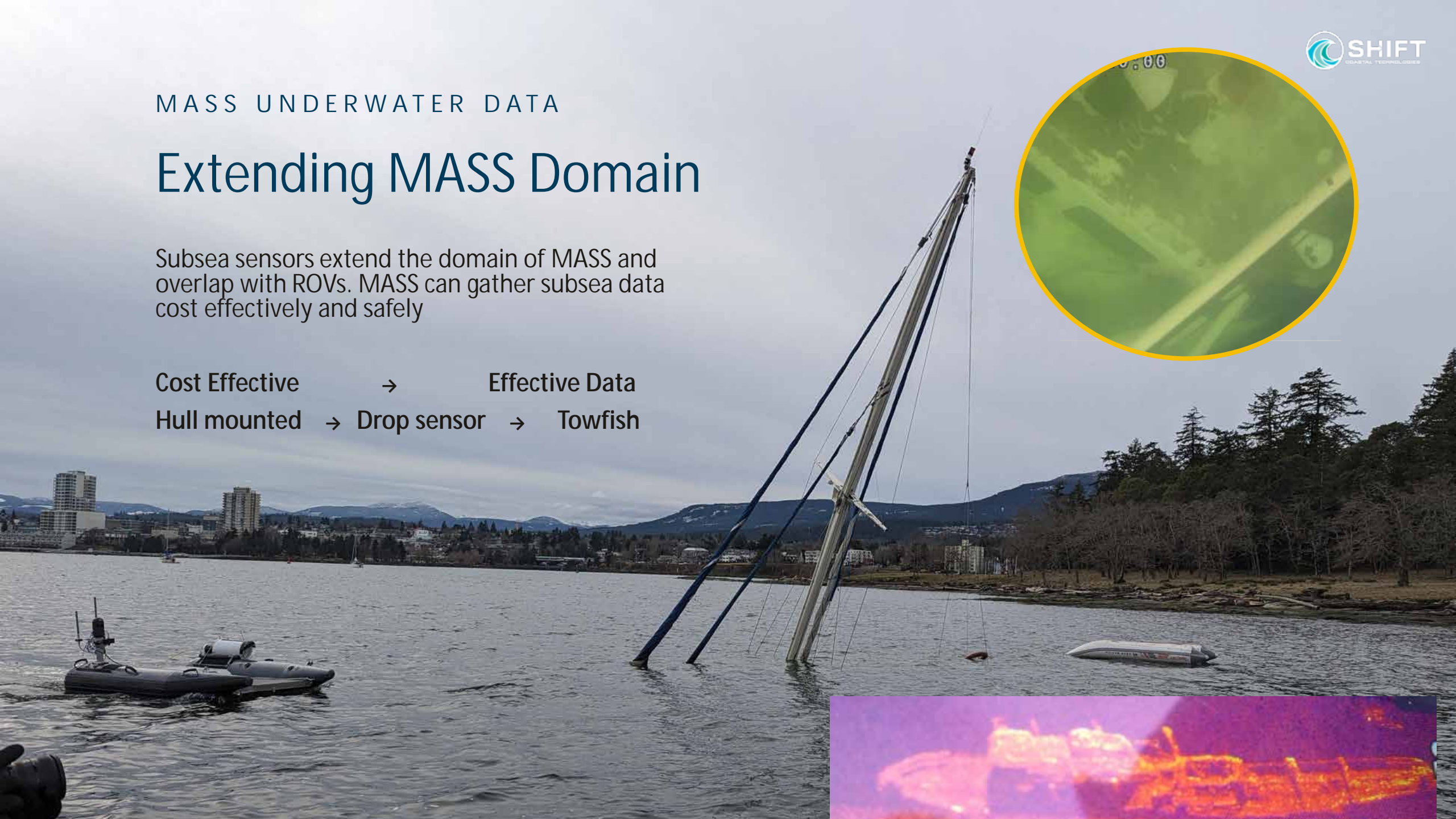
- Less Commercial availability
- 2D operational Domain\*

MASS UNDERWATER DATA

# Extending MASS Domain

Subsea sensors extend the domain of MASS and overlap with ROVs. MASS can gather subsea data cost effectively and safely

Cost Effective → Effective Data  
Hull mounted → Drop sensor → Towfish



WHY CONSIDER A

# Remote Operated Underwater Vehicle?

Highly Maneuverable  
High Quality Data  
Proven History  
Sensors + Manipulators

Expensive  
Skilled operation  
Top-side support



# Combining Autonomous Systems

## TETHERED AERIAL + MASS

- Increase flight duration
- Simplify Maritime Domain operation
- Top down view for control of MASS
- Radio repeating (tall antenna)

## FREE-FLYING AERIAL + MASS

- Top down view
- No separate hardware required
- Full benefits of each system remain
- Land on MASS or conventional LZ
- Radio repeating (in between RCC and MASS)



## CURRENT DEVELOPMENT

# Ocean Characterization



### INTEGRATED SMART REEL

OceanSled integration of a remote controllable Smart Tether reel for a variety of sub-sea sensors.



### SUBSEA PTZ

Capture Subsea images and video with a full 1080p pan tilt zoom camera system with variable intensity LED lighting. All of which is capable of operating 50m below the surface.



### MULTI-SONDES

Swappable sensor modules for ocean temp, pH, Dissolved O<sub>2</sub>, Conductivity, Turbidity, Chlorophyll a, and much much more.



### HYDROPHONES AND PHASED ARRAY

Detect and understand subsea noise with single hydrophones or a towed phased array with smart depth management.

# Thank You

**SHIFT COASTAL  
TECHNOLOGY**

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