



SHIFT

COASTAL TECHNOLOGIES

Steering Maritime Data Into The Future

SMART PORT REAL-TIME MONITORING KIT

Smart Port Real-Time Monitoring Kit

A COLLABORATIVE RESEARCH AND
DEVELOPMENT PORT TECHNOLOGY INITIATIVE



PETROGLYPH
DEVELOPMENT GROUP



BLUENODE



SHIFT COASTAL TECHNOLOGIES

Areas of Expertise



Coastal Monitoring
Technology



Intelligence Surveillance &
Reconnaissance
(ISR)



Remotely Piloted Systems
(air, water, sub-sea)



Oil Spill
Response

What is a Smart Port Monitoring Kit?





MONITORING . MEASURING . MITIGATING What Can We Do About It?

Shift with the NPA, BlueNode and Avestec is pioneering a remote/autonomous platform with rich sensor integrations for Port and Terminal applications to Monitor Measure and Mitigate.

ISSUE 01

Degradation of pilings and caissons

ISSUE 02

Impacts to the environment from vessel and terminal activities

ISSUE 03

The condition of subsurface infrastructure

ISSUE 04

Port Security challenges

ISSUE 05

Underwater and ambient noise

ISSUE 06

Water Quality and Air quality parameters and targets

WHY CONSIDER A Smart Port Monitoring System?



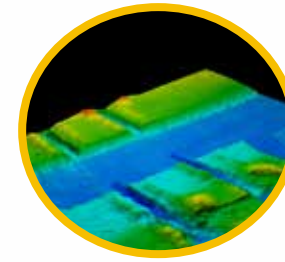
COASTAL ASSETS CAN BE DAMAGED

Natural and built assets within Port jurisdictions require tools to monitor, assess and respond effectively with the right information at the right time



COASTAL FACILITIES REQUIRE A MULTI-MISSION TOOL

that can perform a variety of marine infrastructure monitoring tasks

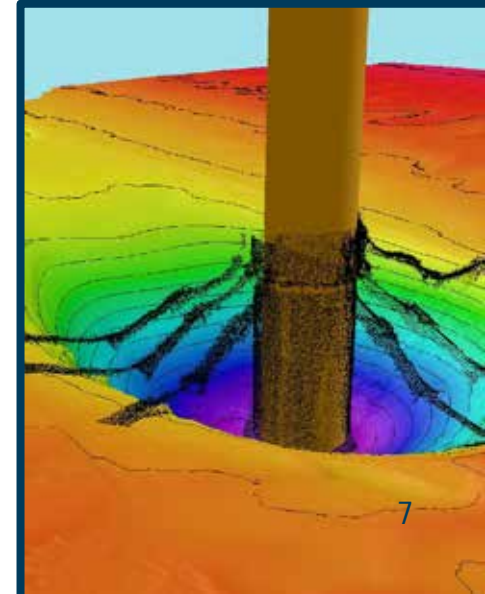


MONITORING MUST BE CONDUCTED EFFECTIVELY, SAFELY AND RAPIDLY

and must be repeatable using intelligent software to monitor change and condition

①

Monitor Asset Condition From the Air, the Surface and Below



②

Prepare for & Respond to Maritime Incidents



3

Collect and Analyze Data Using New Technology



CASE STUDY

Nanaimo Port Authority



ISSUE ONE

Environmental and Community

- Ports are being measured on their environmental performance via their stakeholders and regulators how do we meet their expectations
- Working with local stewards is challenging and time consuming.
- How can we get ahead of such a vast responsibility across performance metrics (le sound footprint, vessel discharge, Anchor scouring, marine mammals, water quality, Air quality..)

REMARK:

Using a Multi-Mission Sensor rich platform capable of performing repeatable and reliable monitoring that can track and organize the data to identify trends.

EXAMPLES

Environment and Community



ISSUE TWO

Marine Infrastructure

The coastal marine environment inflicts havoc on built and natural infrastructure and challenges civil engineers and owners with difficult conditions for gathering inspection and monitoring data to make smart asset management decisions.

- High Costs
- Safety Risks
- High wear, corrosion
- Operational downtime

REMARK:

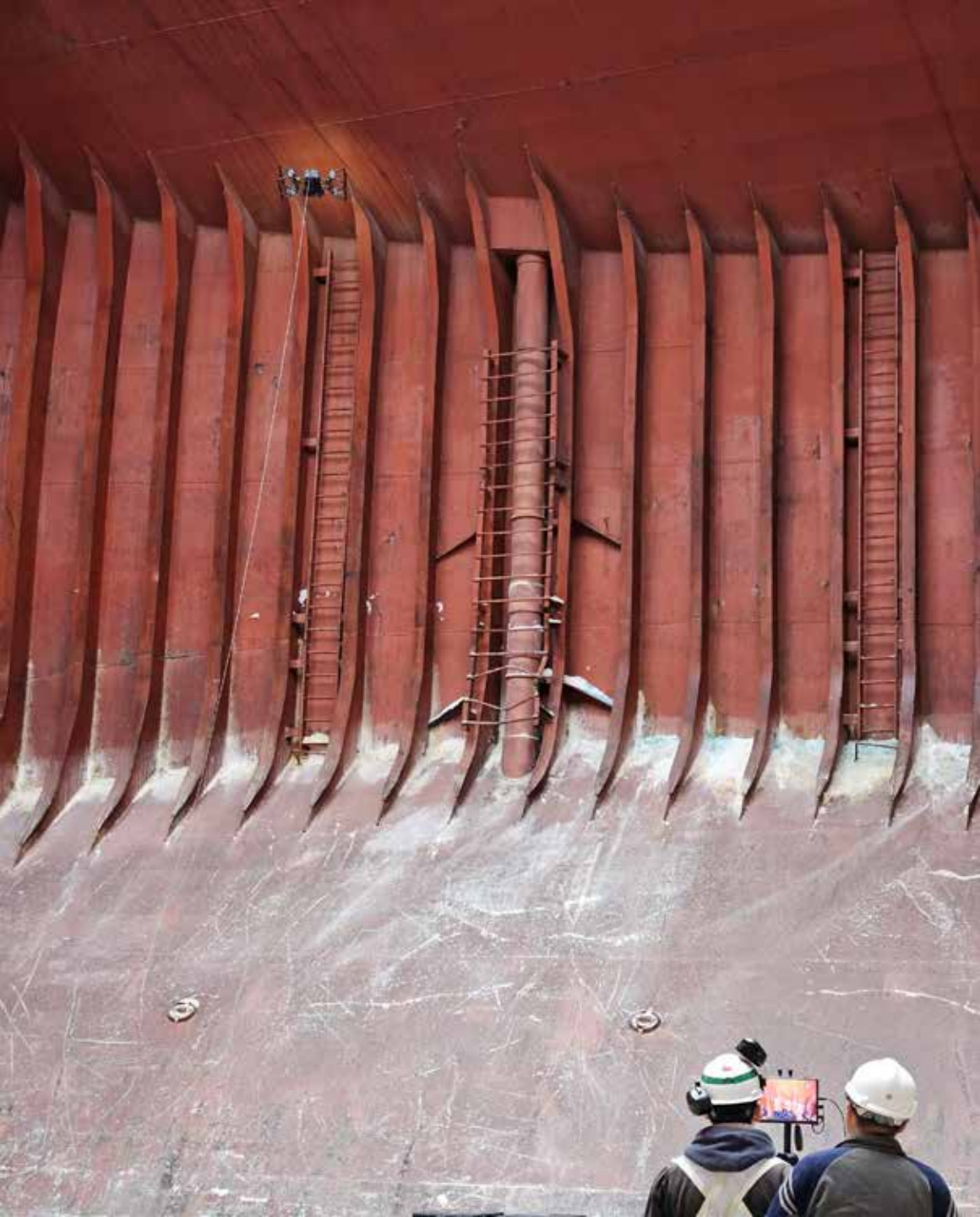
Using a Multi-Mission Sensor rich platform capable of performing repeatable and reliable asset monitoring to develop a digital twin for monitoring change/degradation over time.

- Undercutting of subsurface structures
- Deflection/Material movement
- Corrosion

EXAMPLES

Marine Infrastructure





ISSUE THREE

Marine Incident Management

- Spills and Collisions happen and consume valuable resources and cash.
- Remote sensing technologies are emerging but not well integrated between systems and platforms.
- How can a Port fulfill all functions around Marine Incidents : Anticipate, prepare for, prevent and respond to marine incidents?
- How can a Port Allocate and assign responsibility to the perpetrators to reduce risk for the Port?



REMARK :

Using a Multi-Mission Sensor rich platform capable of sensing and sampling to determine what happened, where and how bad it is?

Cueing via VHF listening station, Radar, citizen reporting, UAV monitoring, Fixed camera platforms.

VOC sensing for developing safe response planning.

ISSUE FOUR

Port Security & Marine Domain Awareness

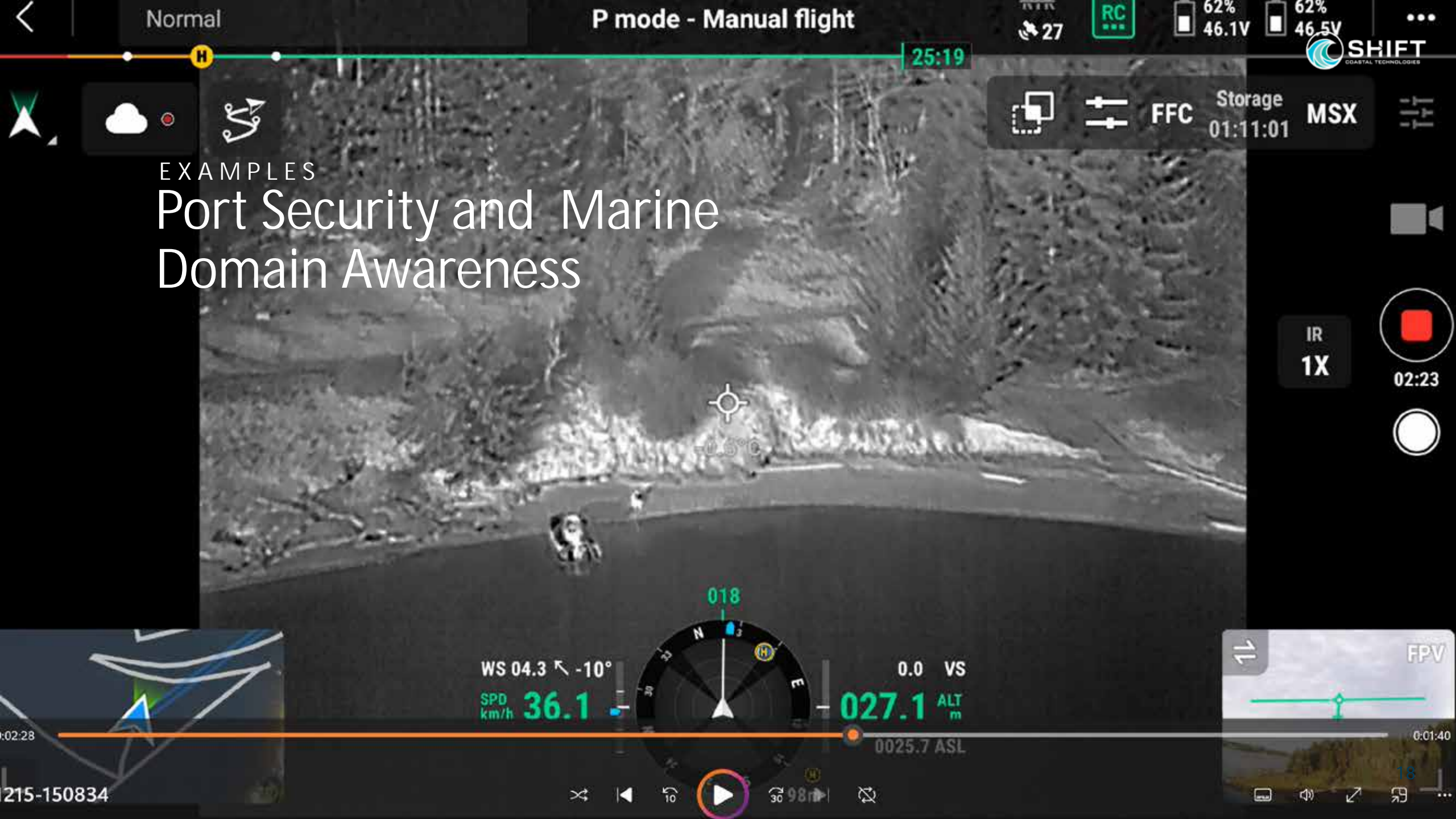
PROBLEM

How does a Port Operator deter and dissuade bad actors?

How do we get optimal MDA systems that can detect cue, inspect and enforce?

REMARK

Using a Multi-Mission Sensor rich platform to monitor and inspect objects of interest using autonomous platforms that can be cued when detected by existing systems ie. AIS, Fixed cameras, radar, Port Police, Passive Acoustic devices, smart buoys.



EXAMPLES

Port Security and Marine Domain Awareness

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ISSUE FIVE

Emission Monitoring and Modelling

- Ports are being told to report and monitor emissions.
- Various auditing programs are defining the landscape as policy rolls out.
- How can an operator find cost-effective methods to track and monitor emissions and report effectively to regulators and auditors.



REMARK

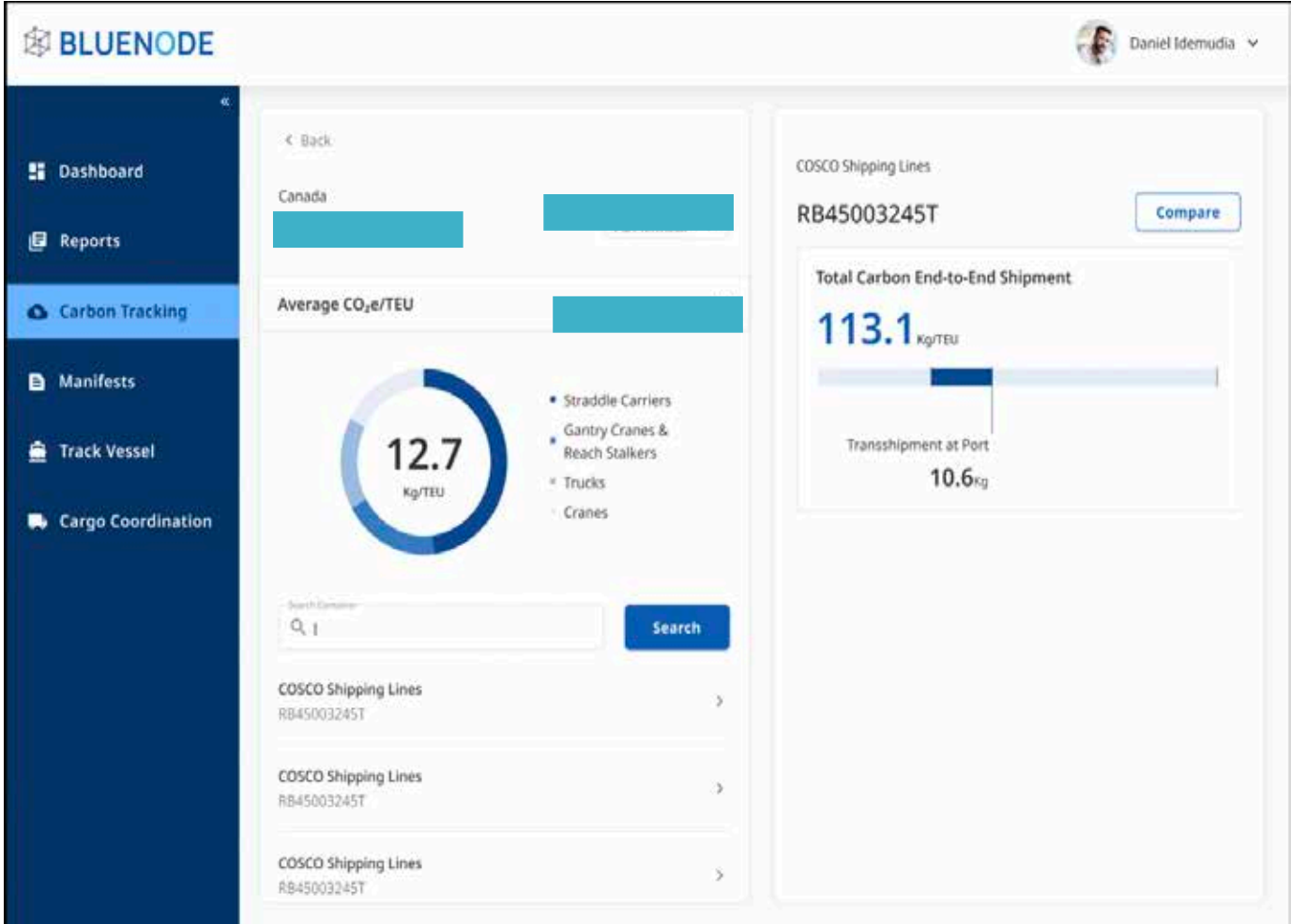
Using many of the same tools required for Marine Infrastructure Monitoring, Marine Incident Management, Environmental Monitoring and Port Security a Smart Port Solution can gather, calculate and truth emission modelling projections.



Carbon Use Case: Asset Utilization

Analyze the flow of cargo and the intensity of CO₂e associated with supply chain

Analyze the factors of carbon intensity in the supply chain



Contact Us

TO PARTNER ON SHIFT'S SMART PORT MONITORING KIT

JSPENCER@SHIFTCOASTAL.COM

+1-250-858-0688

