BARBADOS PORT INC. | PORT SECURITY PRACTICE

From Surveillance to Shared Awareness

A practical model for integrating intelligent CCTV, UAS operations and coordinated incident response at a Caribbean port

Fabian Farrell | CIP 9th Regional Port Security Management Workshop

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MODEL PRESENTATION • EXTERNAL-SHARING VERSION

The executive proposition

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Port security is strongest when people, procedures and technology operate as one system.

SEE

Improve the ability to observe relevant port activity through CCTV, patrols and approved aerial observation.

UNDERSTAND

Validate information, establish context and assess risk before acting.

RESPOND

Coordinate decisions, communicate clearly and capture lessons for improvement.

The objective is not more technology for its own sake. It is better-informed, proportionate and accountable decisions.

A working cruise and cargo port

BPI AT A GLANCE



388

cruise ship calls

~700k

cruise visitors

8

berths

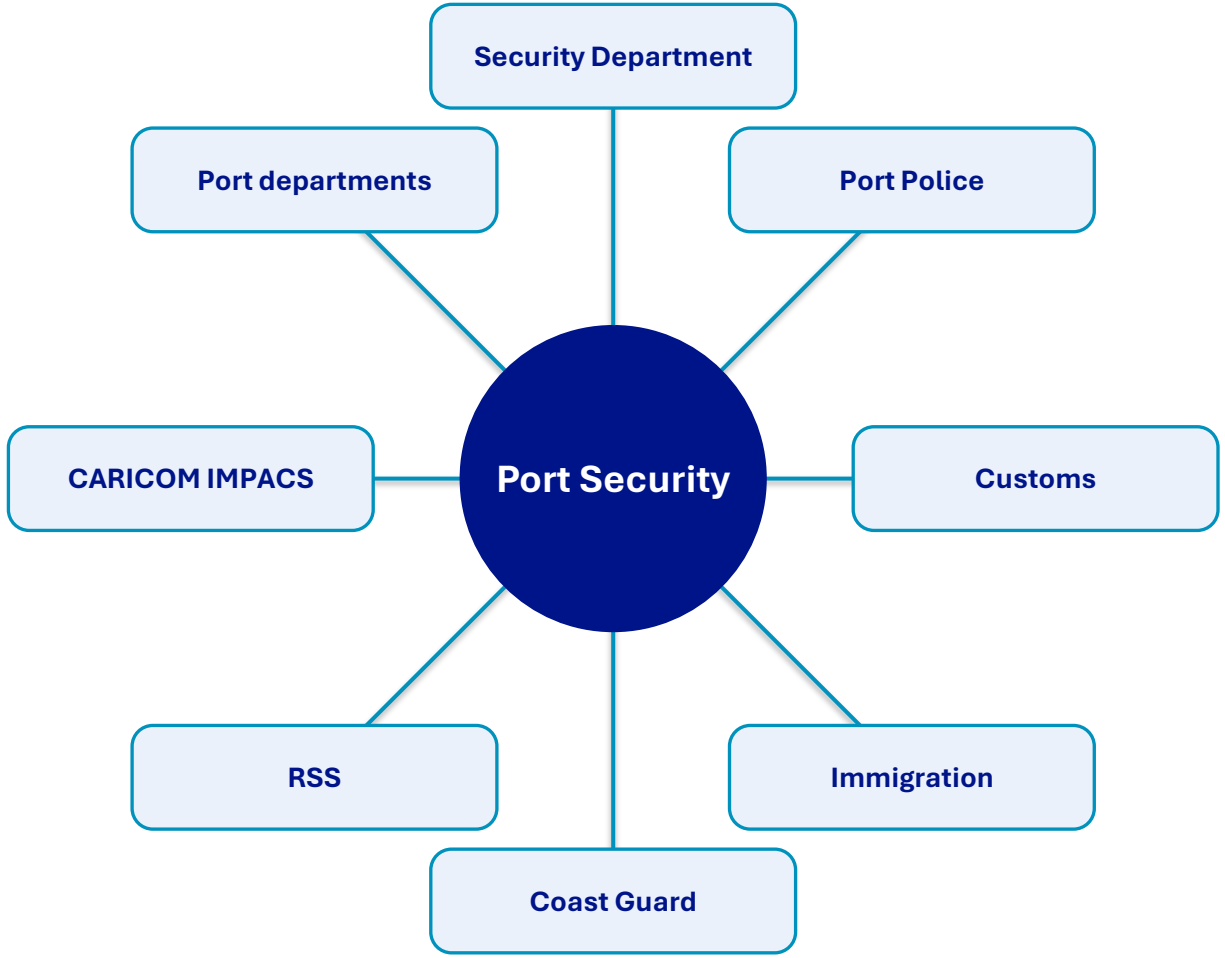
~120k

TEUs of cargo

Containers, liquid bulk, break-bulk and automobiles share the quayside with cruise passengers.

Many agencies, one operating space

Each agency sees part of the picture. Security depends on them seeing the same one.



The common operating challenge for Caribbean ports

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1 Protect everything that matters

Ports must protect people, vessels, cargo, infrastructure and continuity of trade.

2 Overlapping port demands

Cargo and cruise operations create different but overlapping security and safety demands.

3 Hard to see, verify and coordinate

Large, active port environments can make observation, verification and coordination difficult.

4 Tools need people and governance

Emerging tools can improve awareness—but only when supported by trained personnel, clear procedures and sound governance.

What we at BPI set out to do

OBJECTIVES

1

One shared picture

Every agency works from the same facts, at the same moment.

2

Awareness, not only recording

Understand space, movement and conditions as they happen, not just review footage afterwards.

3

Protect people and trade

Keep cruise visitors and cargo moving safely, with less friction.

Seeing is not the same as understanding

THE SHIFT

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Surveillance

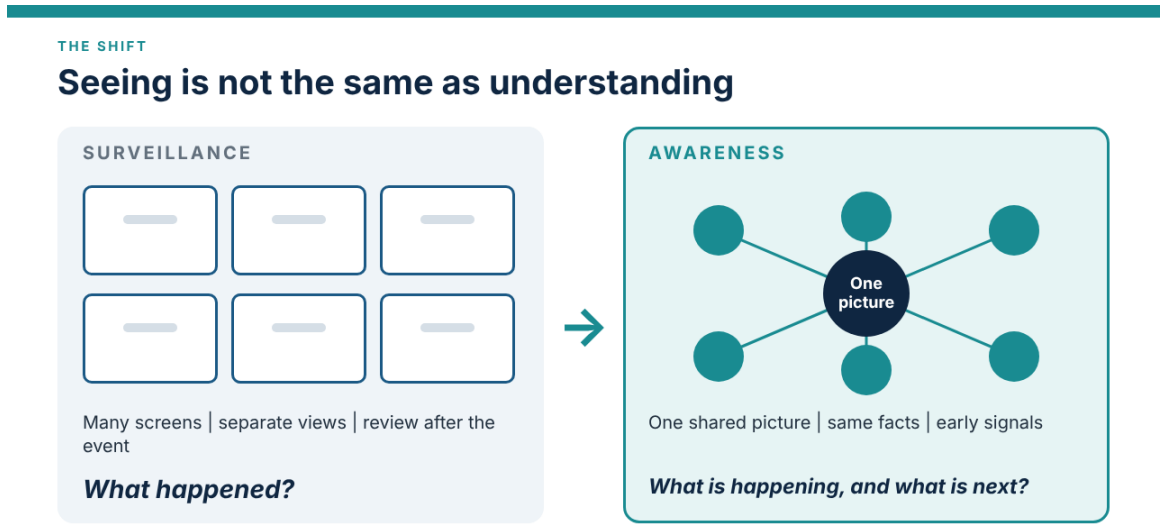
Many screens
Separate agencies, separate views
Review after the event

What happened?

Awareness

One shared picture
Agencies working from the same facts
Early signals, coordinated response

What is happening, and what is next?



WATCH

The technology did not change. The question we ask of it did.

People are the new perimeter

THE HUMAN LAYER | BEHAVIOUR MEETS SOCIAL ENGINEERING

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THEN Threats that force a way in, and are easier to see coming.

NOW **Threats that talk their way in: trust, urgency and impersonation, increasingly blended with cyber and AI-enabled deception.**

Observer effect

HOW IT PROTECTS

People adjust their behaviour when they know they are being watched.

HOW SOCIAL ENGINEERING EXPLOITS IT

Routines are studied, and a confident manner or a uniform is used to look like someone who belongs.

PORT RESPONSE

Visible, consistent presence. Verify identity every time, however confident the person seems.

Social desirability

HOW IT PROTECTS

People act in ways they believe are acceptable, which supports cooperative, respectful interactions.

HOW SOCIAL ENGINEERING EXPLOITS IT

Politeness and the wish to help or avoid awkwardness are used to gain access or information.

PORT RESPONSE

Make it normal, and backed by leaders, to challenge and verify politely.

Stress awareness

HOW IT PROTECTS

Knowing they are recorded heightens awareness in high-stress moments, shaping communication and decisions.

HOW SOCIAL ENGINEERING EXPLOITS IT

Urgency, authority and pressure are used to push people past the usual checks.

PORT RESPONSE

Pause-and-verify routines, agreed call-back steps and exercises held under pressure.

Cameras are a people story first. The SOC turns what they capture into shared understanding, and helps people verify, record and escalate under pressure.

The practice: a layered, integrated security model

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01 DETECT

- CCTV and analytics
- Officer observations
- Approved UAS observation
- Reports from port users

02 VERIFY

- Cross-check available sources
- Confirm location and context
- Assess credibility and urgency
- Avoid premature conclusions

03 COORDINATE

- Route information to the responsible lead
- Use established command arrangements
- Share only what is necessary
- Maintain a clear decision log

04 LEARN

- Review outcomes
- Record lessons
- Refine procedures
- Train and exercise

Real-time examples that prove the practice

CASE STUDIES

Two BPI case studies reinforce the same four themes: detect, verify, coordinate and learn.

CASE STUDY A

CCTV expansion and the operational hub

Four waves from foundation to a shared picture, and the command centre where cameras become decisions.

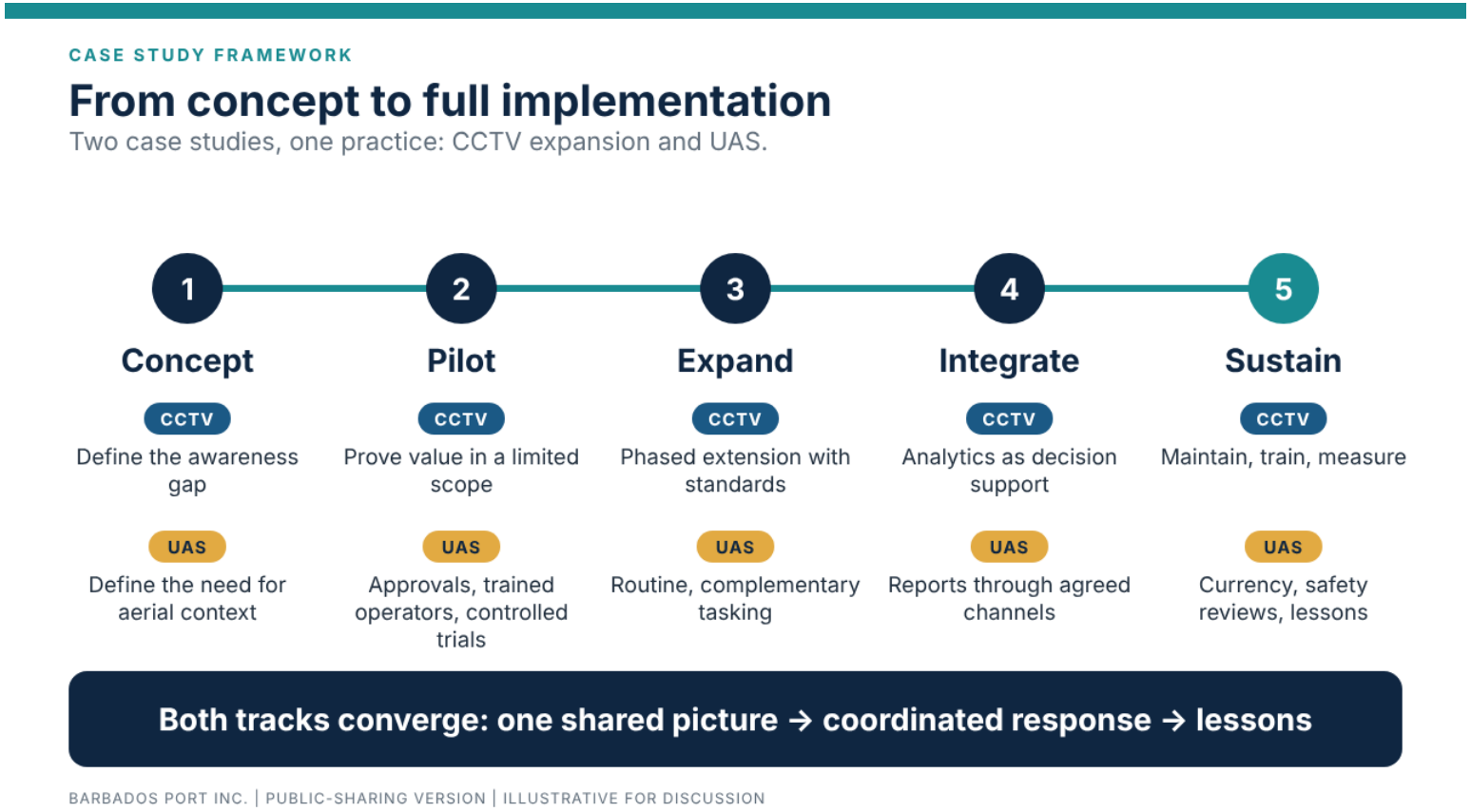
CASE STUDY B

UAS pathway and a traffic case

From concept to routine, lawful use, and an aerial view of a near miss in a shared corridor.

From concept to full implementation

CASE STUDY FRAMEWORK



Draft phases: replace with BPI's confirmed milestones.

Two tracks, one practice

CCTV and UAS follow the same stages: concept, pilot, expand, integrate, sustain.

Every stage earns the next

Approvals, standards, training and review come before scale.

They converge

Both feed one shared picture, coordinated response and documented lessons.



Video not playing? Click to open on YouTube

CCTV expansion: from analogue to 324 views

CASE STUDY A | CCTV EXPANSION

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BEFORE 2007 | FOUNDATION

Analogue CCTV, in place around the 2007 Cricket World Cup in the Caribbean.

REBUILD | TO 2021

About 52 cameras, 22 not working. Rebuilt to 88 working views.

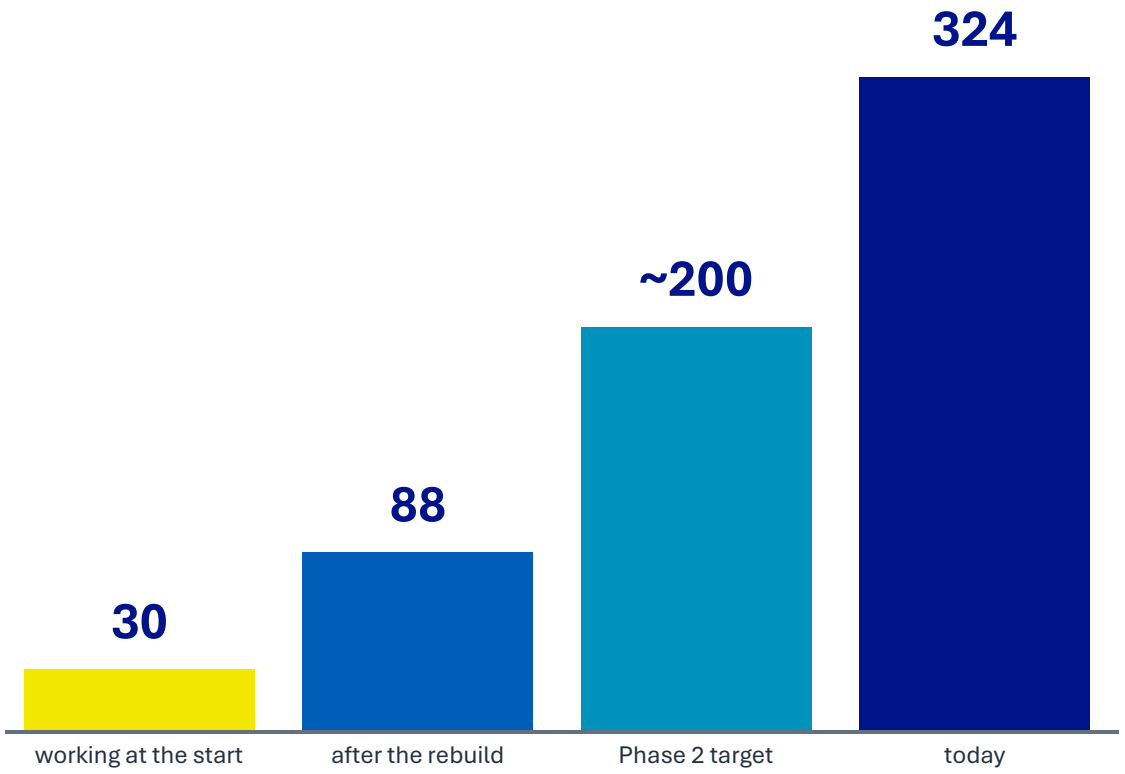
PHASE 2 | EXPANSION

117 more cameras, with about 200 targeted and AI-assisted monitoring.

TODAY | MULTI-SITE

324 camera views on the port surveillance system, plus further views on other servers, including cloud-hosted.

CAMERA VIEWS OVER TIME



More than more cameras: a government-funded new phase of about 2.4 million (currency to confirm), run as one governed capability.

Figures as publicly reported (Barbados Today, 22 Sept 2021; Minister of Maritime Affairs and the Blue Economy, in Parliament) and BPI records. Camera types include quad-view and tri-view units, so one chassis or body can give several views. The video on slide 12 cites over 500 cameras: confirm one figure before presenting.

CCTV expansion: four waves, each earning the next

CASE STUDY A | CCTV EXPANSION

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DETECT

Coverage grows in planned waves across the cruise and cargo areas.

VERIFY

Analytics support decisions; people review every alert.

COORDINATE

Validated information feeds the shared picture for authorised stakeholders.

LEARN

Standards, evidence handling and lessons are reviewed at every wave.



Model of the expansion logic. BPI's actual phases and figures are on the previous slide.

What each CCTV capability adds

CASE STUDY A | CCTV CAPABILITIES

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LICENCE PLATE RECOGNITION

Reads vehicle plates at control points, so staff verify arrivals faster and keep a record.

FACIAL RECOGNITION, GOVERNED

Used only under lawful basis, access controls and human verification before any action.

CLOUD-HOSTED VIEWS

Remote sites join the same picture through cloud video, without a new control room.

AI-ASSISTED ANALYTICS

Tracks movement at night and flags activity for an operator to check.

ONE VIDEO PLATFORM

Facial recognition is moving onto an enterprise video platform, for one operating picture.

NEXT | HALO DEVICES

HALO is a compact smart sensor that sends real-time alerts for events such as smoke, vaping, chemicals or abnormal noise. Planned for areas where video is not suitable.

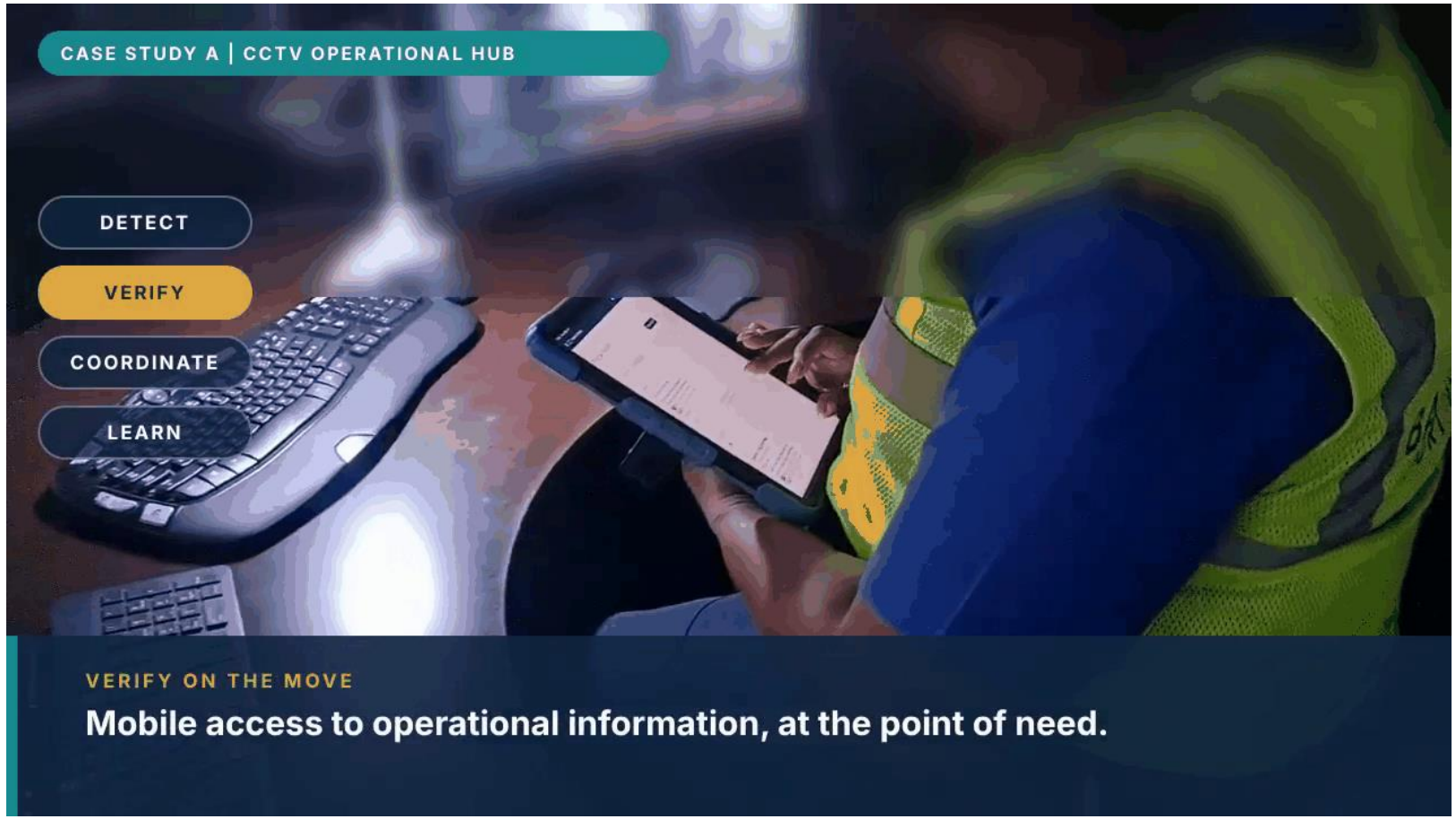
Capability follows governance: each tool has an owner, a lawful basis, trained operators and audit trails.

Camera types include quad-view and tri-view units: several views from one camera chassis or body.

Pr.

The CCTV hub: where cameras become decisions

CASE STUDY A | CCTV OPERATIONAL HUB



BPI command centre footage, re-cut for public sharing. Faces and screen details blurred.

DETECT

One wall brings many camera views together.

VERIFY

Operators check detail on a mobile tablet, at the point of need.

PROTECT AVAILABILITY

The platform's status is watched, so the picture stays on.

COORDINATE AND LEARN

Calls go through agreed channels; decisions are logged.

CCTV: from footage to operational awareness

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Recorded footage → **Operational awareness**

01

Observe and verify

Use the video-management platform to support observation, incident verification and review.

02

Decision support

Apply analytics as decision-support tools; human review remains essential.

03

Share what matters

Where appropriate, provide authorised operational stakeholders with relevant situational information.

04

Protect evidence

Protect evidence quality through access controls, retention rules, audit trails and documented handling.

Public-sharing rule: do not display camera maps, blind spots, credentials, detailed configurations or response timings.

UAS: from concept to routine, lawful use

CASE STUDY B | UAS PATHWAY

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DETECT

Aerial context adds a complementary view for authorised observation.

VERIFY

Cross-check with CCTV and officers before acting.

COORDINATE

Share observations through agreed reporting and command channels.

LEARN

Controlled pilots and safety reviews feed documented lessons.

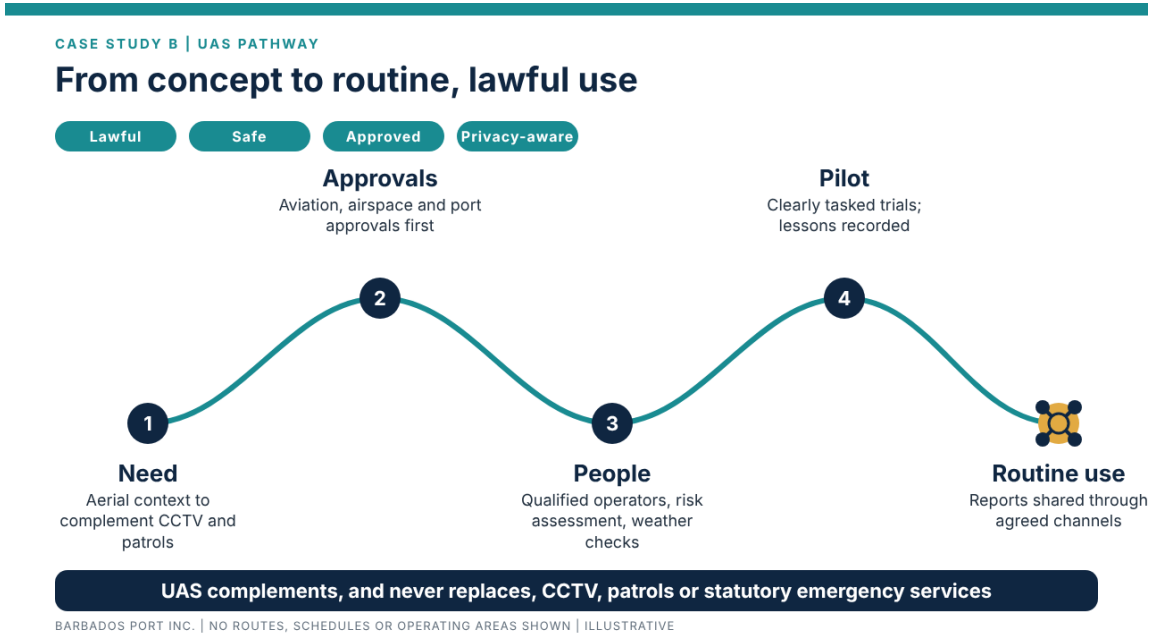


TRANSITION TO CASE STUDY B | THE AERIAL TOOL

DJI Matrice 30T with an LP12 searchlight and speaker

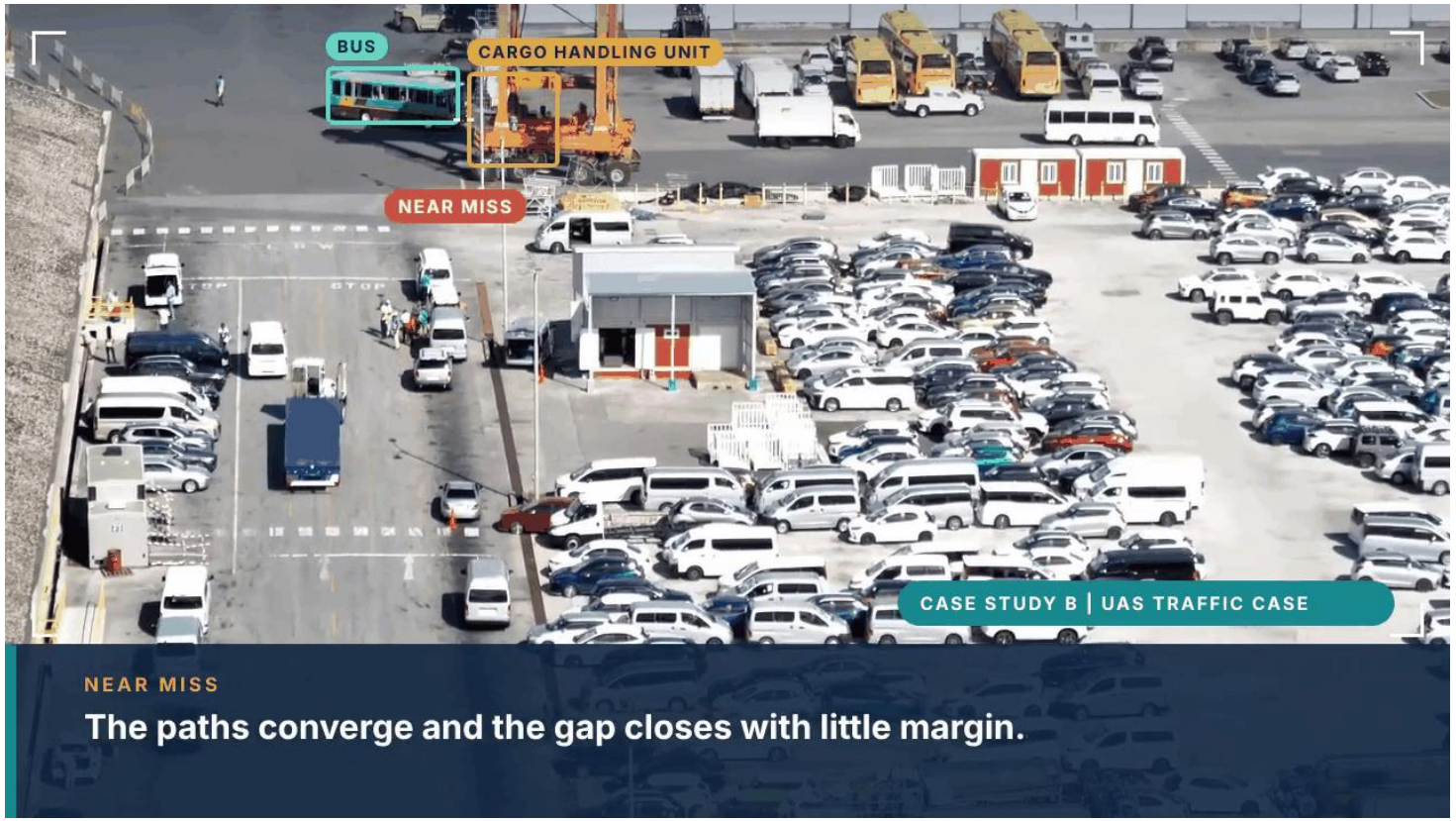
Thermal and zoom cameras, light and loudspeaker: the aerial complement to the CCTV hub.

II.



UAS case: a near miss in a shared corridor

CASE STUDY B | UAS TRAFFIC CASE



BPI drone footage with tracked annotations. Illustrative; confirm before external sharing.

SEE

One aerial view follows a bus, a cargo handling unit and other traffic at once.

VERIFY

CCTV and officers confirm the detail; the aerial view shows where paths converge.

COORDINATE AND LEARN

Report to the responsible lead, then review crossing rules, marshalling and visibility.

UAS: a complementary view, used safely

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POTENTIAL VALUE

Aerial context for authorised observation, safety support and incident assessment.

SAFE EMPLOYMENT

Qualified operators, approved airspace, risk assessment, weather checks and clear tasking.

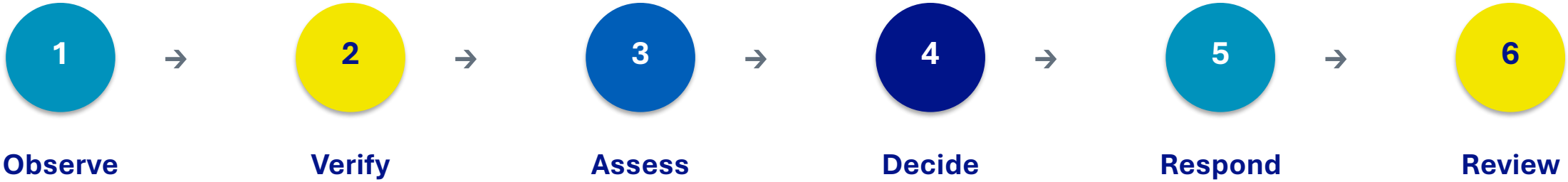
INTEGRATION

Share relevant observations through agreed reporting and command channels.

UAS complements—not replaces—CCTV, physical patrols or statutory emergency services.

Operational use must respect aviation rules, privacy, evidence requirements and port procedures.

A simple incident-to-learning workflow

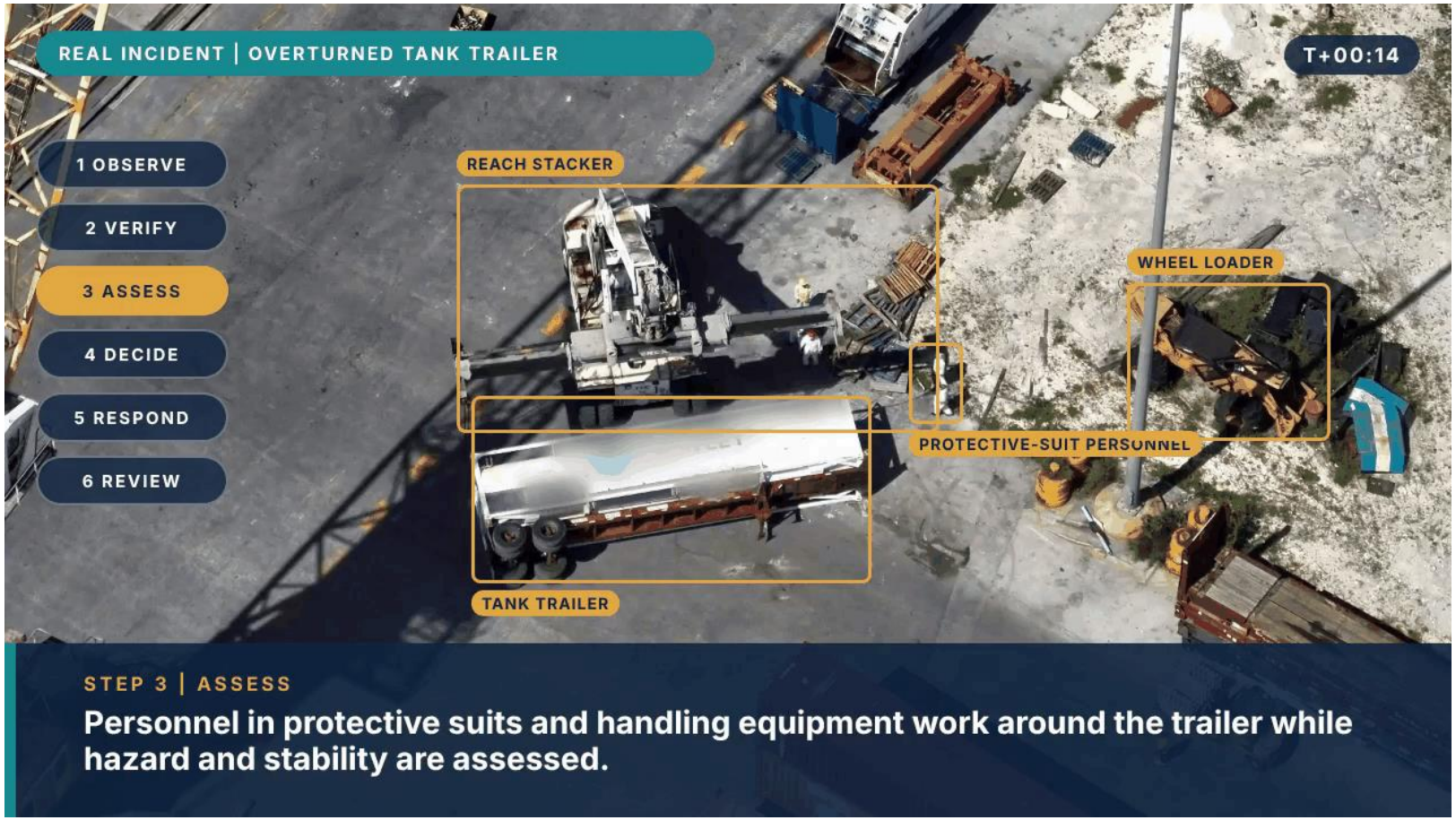


At each stage: identify the responsible person, record material decisions, communicate proportionately and escalate according to approved procedures.

Then see the workflow on a real incident (slides 23–25). Do not disclose real response thresholds or sensitive procedures.

Tank trailer incident: the workflow in action

REAL INCIDENT | THE WORKFLOW IN THE FIELD



BPI drone footage. Carrier branding blurred. Step labels are interpretive.

DETECT

A drone gives a fast, wide view of a yard incident.

VERIFY

The aerial view confirms what and where, before more people move in.

COORDINATE

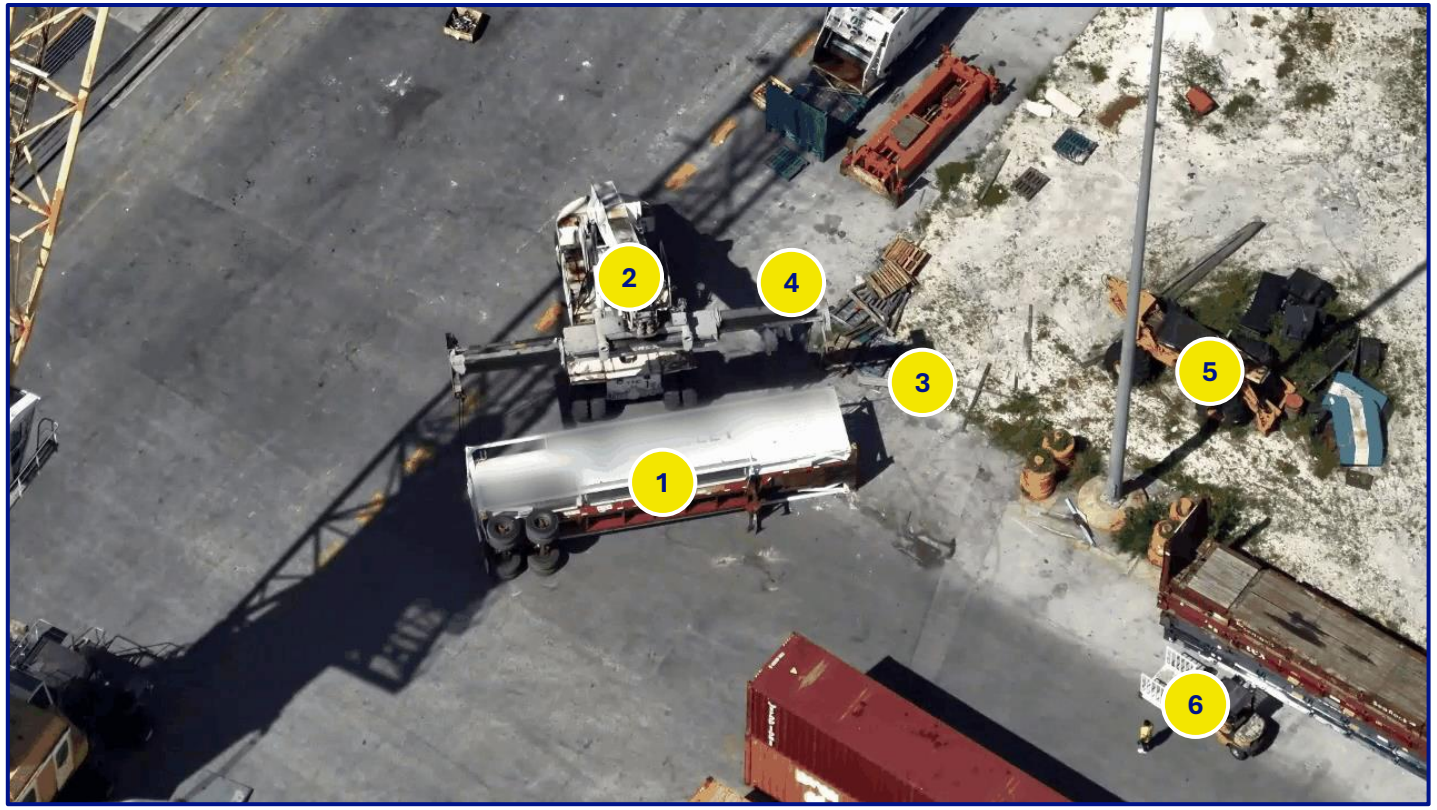
Fire Service, Police, NOTL, NPC, terminal operations and health and safety share one space.

LEARN

The footage is a record for review, training and procedures.

Agencies and parties at the scene

REAL INCIDENT | WHO WAS ON THE SCENE



1 Tank trailer
The carrier's unit; branding blurred for public sharing.

2 Reach stacker
Terminal operations: cargo-handling equipment and crew.

3 White hazmat suits
NOTL and NPC personnel working at the trailer.

4 Hi-vis ground crew
Terminal operations and health and safety personnel.

5 Wheel loader
Heavy equipment held nearby.

6 Forklift
Handling support at the edge of the area.

Parties as confirmed by BPI for this incident.

Also at the scene: Fire Service and Police, alongside NOTL, NPC, terminal operations and health and safety. They are not separately identifiable in the aerial footage.

SEE one view of every party. **COORDINATE** who leads, who supports.

The same workflow, rehearsed every year

REHEARSAL | ANNUAL INTERAGENCY TABLETOP EXERCISE | CLICK ANY TILE TO PLAY | SOUND ON



STEP | OBSERVE + VERIFY

Briefing: everyone starts from one shared picture.



STEP | ASSESS

Police, port and partner agencies compare what they know.



STEP | DECIDE

Table discussion on options, roles and who leads.



STEP | RESPOND

The facilitator probes hand-offs between agencies.



STEP | REVIEW

The debrief turns the exercise into lessons and training.

WHO IS AT THE TABLE

Police
Fire Service
Barbados Port Inc. operations and security
Uniformed maritime and defence personnel
Terminal and health and safety staff

Identified from visible markings; confirm before presenting. Faces blurred; captions on screen.

Demonstrate value with evidence, not adjectives

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CAPABILITY OUTPUTS

Trained operators
Approved procedures
Systems in operational use
Exercises completed

OPERATIONAL INDICATORS

Time to verify an event
Time to notify the right lead
Quality of incident records
Availability and training currency

OUTCOMES TO TEST

Faster, better-informed decisions
Improved evidence handling
Less duplicated effort
More consistent incident reviews

REPORTED RESULTS | PUBLIC RECORD AND BPI FIGURES

324	52 to ~200	70 to 40 min	12 to 6 days	$1 million
camera views on the port surveillance system (BPI); other servers add more	cameras, with 117 added in Phase 2 (2021)	truck turnaround time, as reported	container dwell time, as reported	in contraband seized in one month (2021)

Source: Barbados Today, 22 Sept 2021 (Minister of Maritime Affairs and the Blue Economy, in Parliament) and BPI records. These are reported figures; port efficiency gains are not attributed to CCTV alone, and current figures should be confirmed.

Lessons learned for BPI port security leaders

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1 Process before technology

Design the operating process before buying or expanding technology.

2 Clear ownership

Assign ownership for tasking, decision-making, escalation and review.

3 Train across roles

Train across roles—not only on individual systems—and exercise realistic scenarios.

4 Governance by design

Build privacy, cyber security, evidence management and access governance into the design.

5 Protect availability

Use maintenance, connectivity and vendor support plans to protect availability.

6 Evaluate and adapt

Evaluate performance and adapt the model using documented lessons.

Regional cooperation: practical next steps

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1 COMMON LEARNING

Share anonymised case studies, exercise formats and lessons learned.

2 TRAINING EXCHANGE

Develop cross-port workshops for CCTV, UAS safety and incident coordination.

3 INTEROPERABILITY

Agree practical contact pathways and information-sharing principles for incidents.

4 MEASURE AND REVIEW

Use a small shared set of readiness and exercise-performance indicators.

Start with voluntary, low-risk collaboration; protect sensitive information and respect each jurisdiction's laws and authorities.

KEY MESSAGE

Technology creates potential.

People, procedures and partnerships turn it into capability.

A resilient Caribbean port-security model is integrated, lawful, measurable and built for cooperation.

Thank you | Questions and discussion