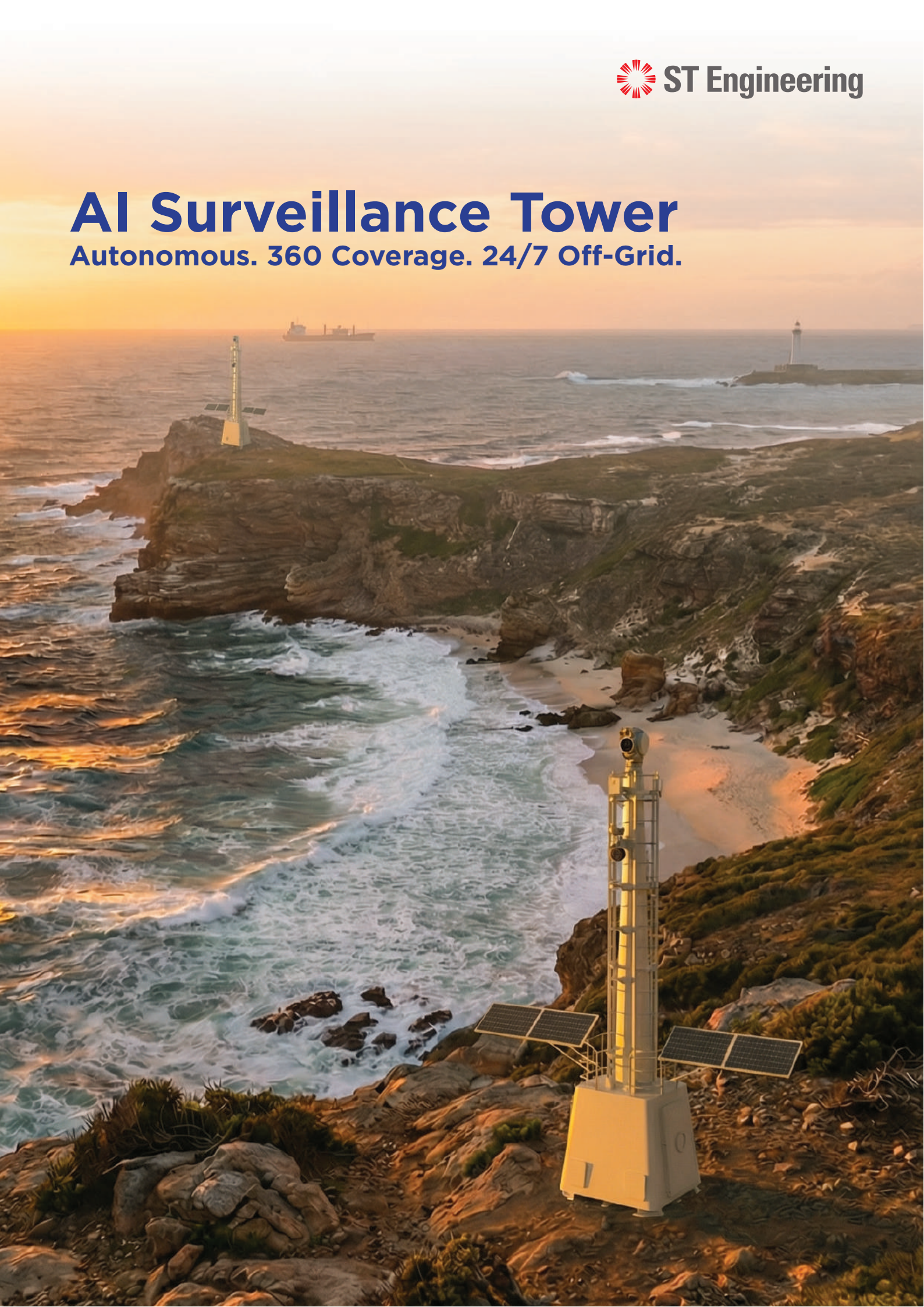
ST Engineering

AI Surveillance Tower

Autonomous. 360 Coverage. 24/7 Off-Grid.



Respond Faster.
Protect Smarter.
Endure Longer.



The AI Surveillance Tower (AST) is an autonomous maritime surveillance solution that brings persistent maritime domain awareness to coastal and remote environments where it is needed most.

Vast open coastlines demand wide-area awareness across ports, straits and remote islands. Traditional patrols are costly and reactive.

The AST turns surveillance into a proactive, scalable network, delivering real-time insight from shorelines to offshore platforms without expanding headcount.

Key Operational Capabilities

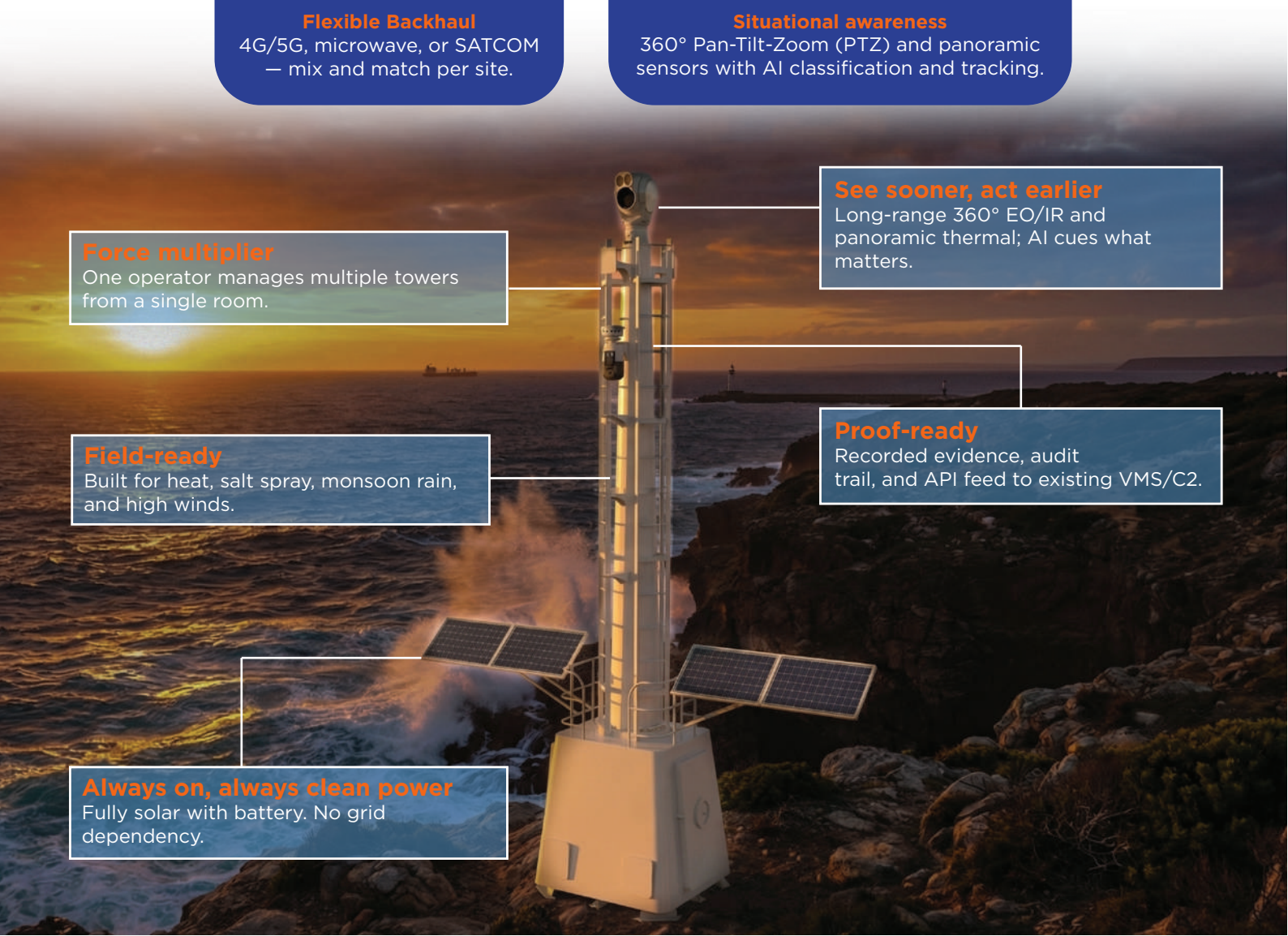
Multi-Tower Control
Map view, hand-off between sites, single-operator operations.

Alerting and Workflows
Rules, confidence scoring, event logs, and dispatch prompts.

Drone-Enabled (optional)
UAV integration for remote target verification.

Flexible Backhaul
4G/5G, microwave, or SATCOM — mix and match per site.

Situational awareness
360° Pan-Tilt-Zoom (PTZ) and panoramic sensors with AI classification and tracking.



Force multiplier
One operator manages multiple towers from a single room.

See sooner, act earlier
Long-range 360° EO/IR and panoramic thermal; AI cues what matters.

Field-ready
Built for heat, salt spray, monsoon rain, and high winds.

Proof-ready
Recorded evidence, audit trail, and API feed to existing VMS/C2.

Always on, always clean power
Fully solar with battery. No grid dependency.

Benefits



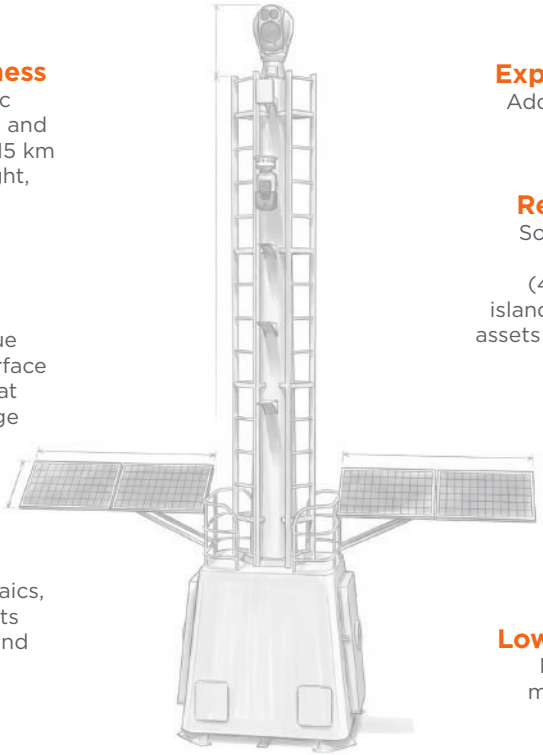
Wide Area Awareness
360° EO/IR + panoramic view detects small craft and people at range (up to 15 km detect, typical), day/night, haze-piercing thermal.



Act Sooner with Fewer People
AI classification, auto-cue PTZ, and smart rules surface only what matters so that one operator can manage multiple towers.



Evidence and Compliance
Time-synced video mosaics, audit logs, secure exports support investigations and chain-of-custody.



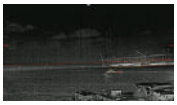
Expandable Network
Add towers, UAV pads, or USV links over time.



Remote-Site Ready
Solar/battery power and encrypted backhaul (4G/5G/SATCOM) keep islands, straits and offshore assets continuously covered.



Safety and Duy-of-Care
Integrated thermal for man-overboard and night operations; automated alerts reduce response time.



Lower Lifecycle Cost
Minimal ground works, modular spares, remote firmware updates.



Concept of Operations

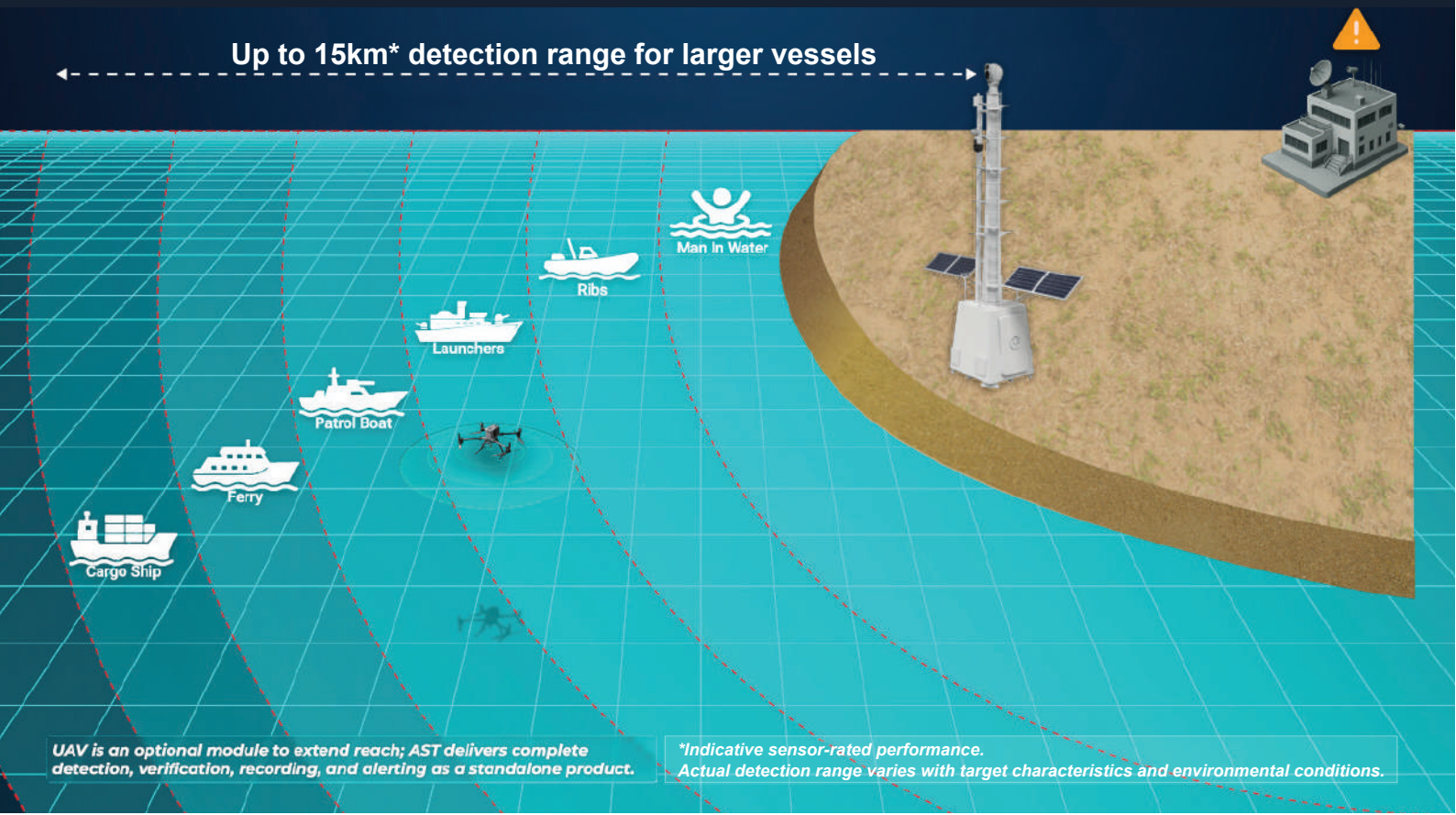
1. Scan and Detect
AST continuously sweeps the horizon with its panoramic sensors while edge AI proactively searches for Targets of Interest (TOI).

Suspects are auto-flagged and the PTZ is cued for confirmation.

2. Verify and Decide
The operator receives a unified alert (pano / thermal / PTZ + HUD overlays), quickly elevates or dismisses the event, and selects a response playbook.

3. Emergency Response
AST can maintain 360° awareness, recording evidence, and notifying authorities per SOP on its own; or with UAV.

4. Resolve and Archive
On resolution, AST compiles an evidence package (clips, tracks, notes), syncs it to the control room, and returns to continuous scanning; rules and TOI libraries are refined over time.



UAV is an optional module to extend reach; AST delivers complete detection, verification, recording, and alerting as a standalone product.

**Indicative sensor-rated performance.*
Actual detection range varies with target characteristics and environmental conditions.

Specifications

Weather Sealed and Solar Powered

- Marine-grade enclosure (IP66/NEMA 4Xclass).
- Solar array and Li-battery pack sized; automatic power management.
- Environmental readiness.
- Energy autonomy: Supports 24/7 sensing, night operations, and UAV charging (where equipped).

Electro Optical Unit

- 360° sphere platform with high-zoom visible and thermal; day/night.
- Long-range detection, rapid ID;
- Temperature/Anomaly alerts
- Outputs: stabilized video, bounding boxes, range/heading estimate to HUD.

Panoramic and PTZ Camera

- Stitched panoramic (≈180°) .
- Smart functions: intrusion and line-crossing, region enter/exit, object class (human/small craft), multi-target tracking.
- Auto hand-off from pano to PTZ.

Computing and Software

- Rugged edge compute; secure content storage; health monitoring.
- Operator UI: HUD overlays, bounding boxes, range/heading cues, event timeline.
- Integrations: REST/ONVIF/API feed to VMS/C2; role-based access.

Power and Enclosure

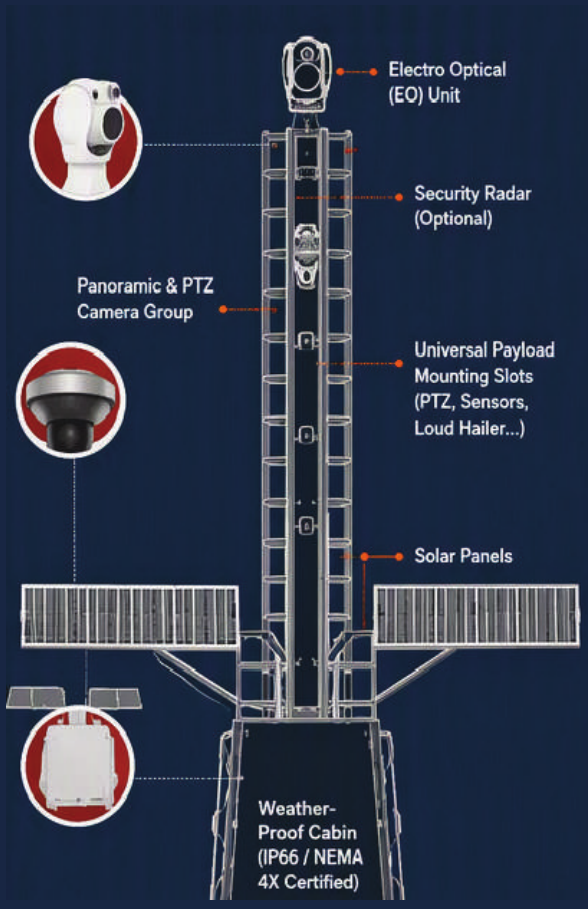
- Solar array and Li-battery pack; auto power management.
- Marine-grade materials.

Deployment

- Pad/anchor mount; craned or trucked; ISO-container transport.
- Remote firmware, model updates, telemetry, and diagnostics.

Comms

- Primary: 4G/5G, SATCOM.
- Encrypted links; store-and-forward.



ST Engineering

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