



Maritime AI

VANTAIGE

*AI-Enabled Autonomous Maritime Person-Overboard
Detection, Search and Support*

COMMERCIAL IN CONFIDENCE

A person goes overboard. The search complexity compounds every second.

Detection alone does not solve the problem.

The moment visual contact is lost, the casualty's position becomes increasingly uncertain. The vessel, wind, tides, currents, and rescue assets all continue moving. Every passing minute expands the search area and degrades the probability of survival.

Variables in play:

- Last known position
- Vessel course and speed
- Wind speed and direction
- Tides and currents
- Elapsed time
- Drone endurance
- Detection confidence
- Rescue asset position

Evidence base.

Analysis of **308 UK person-overboard incidents** revealed a **40% fatality rate** within the examined dataset. The window for successful rescue narrows dramatically in the first minutes after an incident.



A system that detects but cannot search, locate and support the casualty has only solved the first part of the problem.

Person Overboard > Casualty Support

VANTAIGE manages the full operational response. From the moment of incident through detection, localization and casualty support, while remaining consistent with established maritime search and rescue procedures. **It supports the crew – it does not replace them.**



1 Incident & State Capture

Person-overboard event triggers capture of vessel position, heading, course and speed.

2 Data Fusion

Navigation data fused with live environmental inputs – wind, tides, currents to model casualty drift.

3 Search Generation

Optimal search area and search pattern generated. Drone deployed into the search zone.

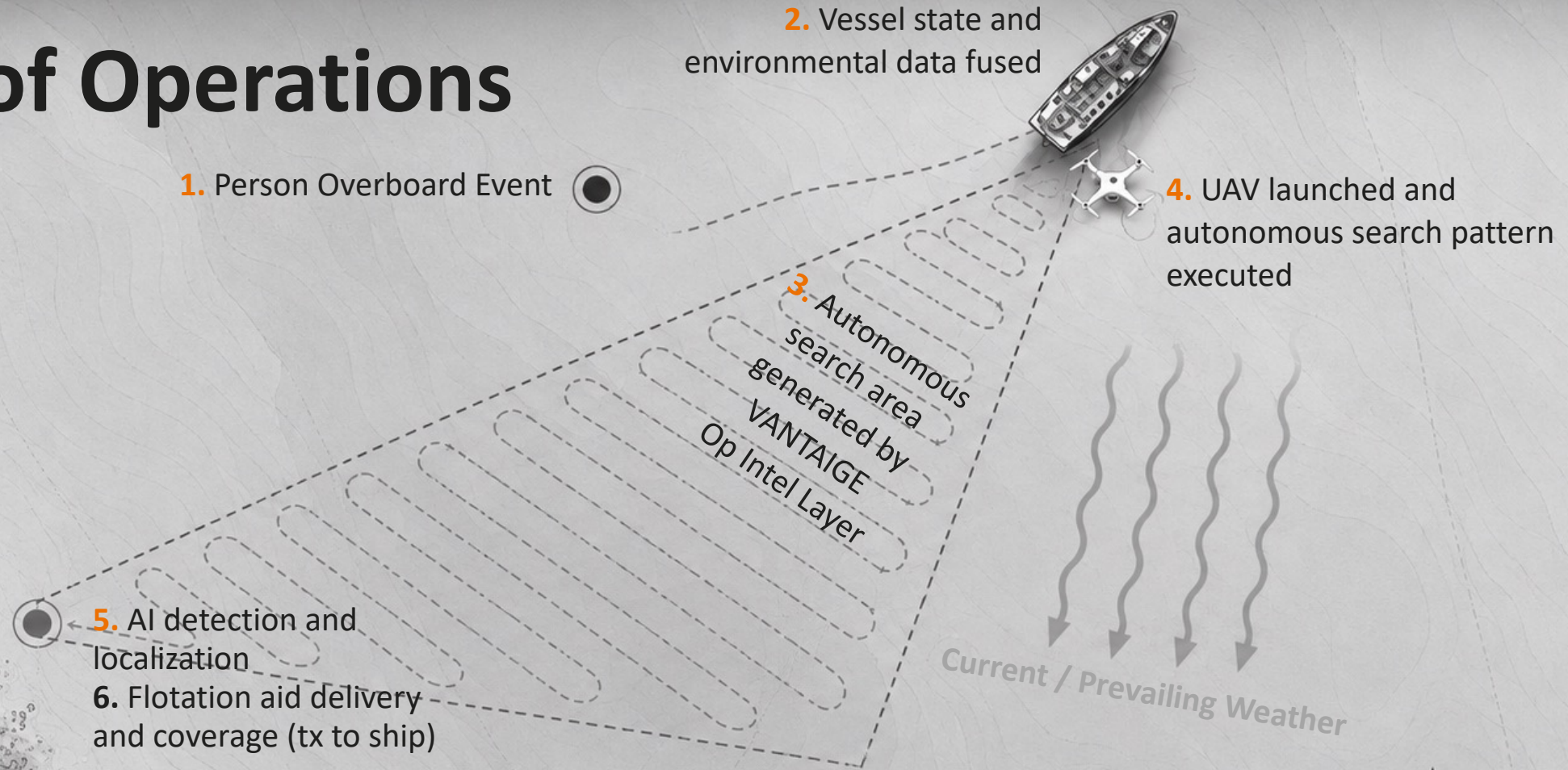
4 Detection & Localisation

Thermal AI detects potential casualty. Position established and transmitted back to the vessel. Intercept course recommended.

5 Casualty Support

Flotation or survival aid deployed. Vessel and external SAR assets guided to casualty position.

Concept of Operations



Proven perception layer.

VANTAIGE is no longer an untested AI concept. The detection capability rests on a body of original research conducted by Coal Face AI's founder in 2025 - using real maritime thermal imagery, rigorous dataset construction and validated model performance.

10K+

Annotated Images

Manually curated maritime thermal images used for model training and evaluation.

40

Research Participants

Used in the original dataset collection and research program.

0.97

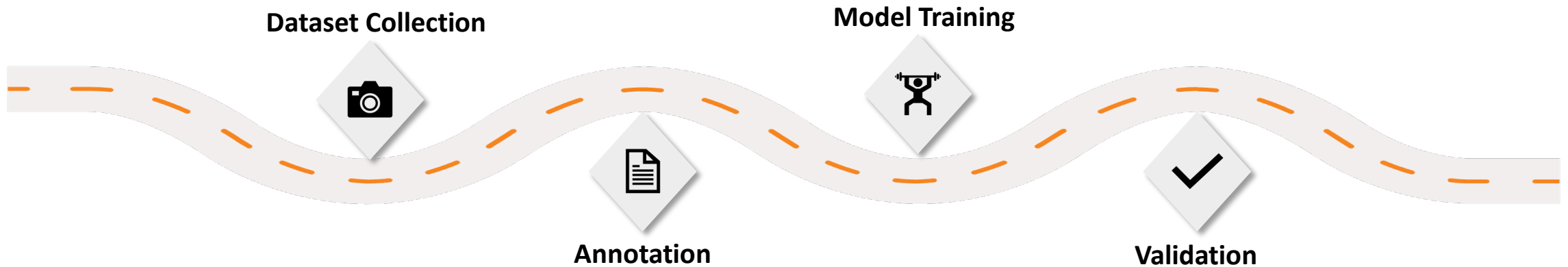
Precision

Achieved by the YOLO-based person detection model on validation data.

0.96

Recall

Demonstrated near-real-time inference on representative maritime thermal imagery.



Prototyping is already underway

Coal Face AI is already physically prototyping VANTAIGE, committing internal and founder capital to purchase commercial off-the-shelf hardware. Development is progressing now. Further funding would accelerate an existing programme – not initiate one.

01

Edge Compute

On-device inference hardware for thermal AI processing with sufficient compute headroom for real-time detection.

02

Power & Management

Power supply, conditioning and management hardware sized for maritime operating conditions.

03

Communications

Hardware enabling air-to-vessel and vessel-to-shore data links during search operations.

04

GNSS / Positioning & Navigation Integration

Independent positioning hardware providing casualty and platform localization independent of vessel navigation. Components enabling VANTAIGE to receive and fuse vessel navigation data in real time.

05

Networking & Interface

Supporting electronics, cabling, connectors and integration components for a coherent hardware stack.

Why VANTAIGE is difficult to copy.

The moat is not a single drone, thermal camera or model. It is the integrated safety-critical system built around the first minutes of a person-overboard response.

VANTAIGE Operational Intelligence Layer

Original Maritime Thermal Dataset

10K curated/annotated images. Environmental diversity becomes proprietary evidence.

Validated Perception Research

Precision/recall already demonstrated so this is not a paper-only concept.

Operational Search Logic

Drift, geometry, endurance, search patterns and safety limits.

System Integration Barrier

Vessel data, GNSS, environmental inputs, UAV telemetry and thermal AI detection.

Founder-Market Fit

RN operational background plus postgraduate AI research into this exact problem.

Assurance & Certification Path

Safety-critical maritime/aviation integration creates a defensibility barrier.

“Why can’t DJI/Kongsberg/Wärtsilä just build this?”

They can build pieces. VANTAIGE is being built as the safety-critical, end-to-end operational layer that makes those pieces search, locate and support the casualty as one coherent response.

Built for recurring revenue, not one-off hardware

The installed system creates a platform for annual software, assurance and fleet-level intelligence revenue.

01

VANTAIGE System

Hardware, installation
and vessel integration

One-off sale

02

VANTAIGE Intelligence

Annual software license,
model updates and
search-planning
capability

Recurring

03

VANTAIGE Assurance

Support, maintenance,
SLA, safety updates and
periodic validation

Recurring

04

VANTAIGE Fleet/OEM

Fleet analytics, multi-
vessel oversight and
integration licensing

Expansion

Illustrative commercial architecture

System sale/install + annual software license + annual assurance/SLA. Higher-value fleet and OEM licensing becomes the scale later once the core capability is proven.

Large fleet. Narrow wedge. Expanding platform.

The first commercial wedge is professional operators with acute person-overboard risk, duty-of-care exposure and the willingness to invest in safety capability.

Fleet Context

116K

Global commercial fleet

327

CLIA-member cruise ships
in 2026

1. Beachhead

Offshore energy,
workboats,
passenger/cruise,
defence/SAR pilots
where MOB exposure
and duty-of-care
pressure are highest

2. Professional Fleet

Commercial shipping
operators, fleet
managers, safety
leaders and insurance
once vessel trials
validate the system

3. Platform Expansion

OEM/system
integrator
partnerships, fleet
analytics and recurrent
intelligence/assurance
revenue

Investor logic

Start with the operators who feel the problem most acutely. Use pilots to validate technical performance, pricing and buyer urgency, then expand through fleet and OEM channels.

Sources: UNCTAD Data Hub / Clarksons Research, global merchant fleet at 1 Jan 2026; Cruise Lines International Association, 2026 global member fleet.

Built from the operational problem backwards.

VANTAIGE originates with a founder who has lived the problem. Serving as an operational Intelligence officer in the Royal Navy and leading AI capability development whilst conducting the original research that underpins the detection system. The project combines maritime experience with AI and practical engineering.

VANTAIGE is built from real maritime experience, proven AI research and practical engineering. Led by Tom, whose 20+ years of Royal Navy service and postgraduate AI research shaped the original concept, the programme is focused on turning that operational insight into a robust, deployable system that can materially improve person-overboard search and recovery.

Tom Wilson MSc

UK founded. Built for global
maritime deployment



Specialist Capability Required Across the Programme

- **Maritime Systems Engineering**
Vessel integration, seakeeping, environmental ruggedisation
- **Embedded & Software Engineering**
Edge compute, real-time systems, communications
- **UAV Integration**
Airframe, payload, maritime operating environment
- **Certification & Regulatory**
Maritime safety assurance, aviation regulatory compliance
- **Manufacturing & Production**
Production-intent hardware, supplier development

Some roles have already been recruited. Others will be recruited against as required throughout the programme.

Pre-seed to maritime validation.

The round turns validated research and an underway prototype into a full-time team, test platform and a viable route to engineering iterations, maritime trials and certification.

Raising

£1.5M

Runway: 24 months

Objective: De-risk VANTAIGE sufficiently for pilot deployment, commercial conversations and follow-on Seed round.

People & Engineering

Full-time team + embedded, ML, UAV, certification and specialist support



£716k 48%

Platforms & Hardware

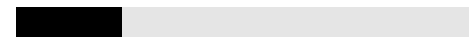
Test vessel, UAV systems, bridge hardware and pre-production units



£230k 15%

Trials & Assurance

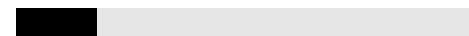
Sea trials, aviation ops, pre-compliance, safety and certification activity



£160k 11%

Operations & Commercial

IP/legal, insurance, workspace, pilots, demos and customer development



£122k 8%

Data & AI

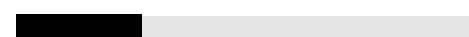
Dataset expansion, annotation QA, compute, tooling and model development



£81k 5%

Contingency & Reserve

Protects programme against technical, marine and regulatory uncertainty



£191k 13%

Round type: Pre-seed equity round. Final allocation to be adjusted after quotes, partner terms and trial plan.

What this round gets investors to.

Each milestone moves VANTAIGE from “promising research / prototype” toward a financeable, pilot-ready maritime safety capability.

Target Outcome:

A vessel-tested autonomous maritime search capability, supported by trial evidence, defined customer pilots, an assurance pathway and a repeatable commercial proposition.

M1

Integrated Prototype Stack

Bridge system, edge compute, power, comms and thermal / UAV workflow assembled.

M2

Vessel & Environmental Fusion

GNSS, vessel state and environmental inputs feeding the operational intelligence layer.

M3

Autonomous Search Validation

Drift / search generation tested against representative person-overboard scenarios.

M4

Maritime Trials Evidence

End-to-end search, detection and localization tested from a vessel-based programme.

M5

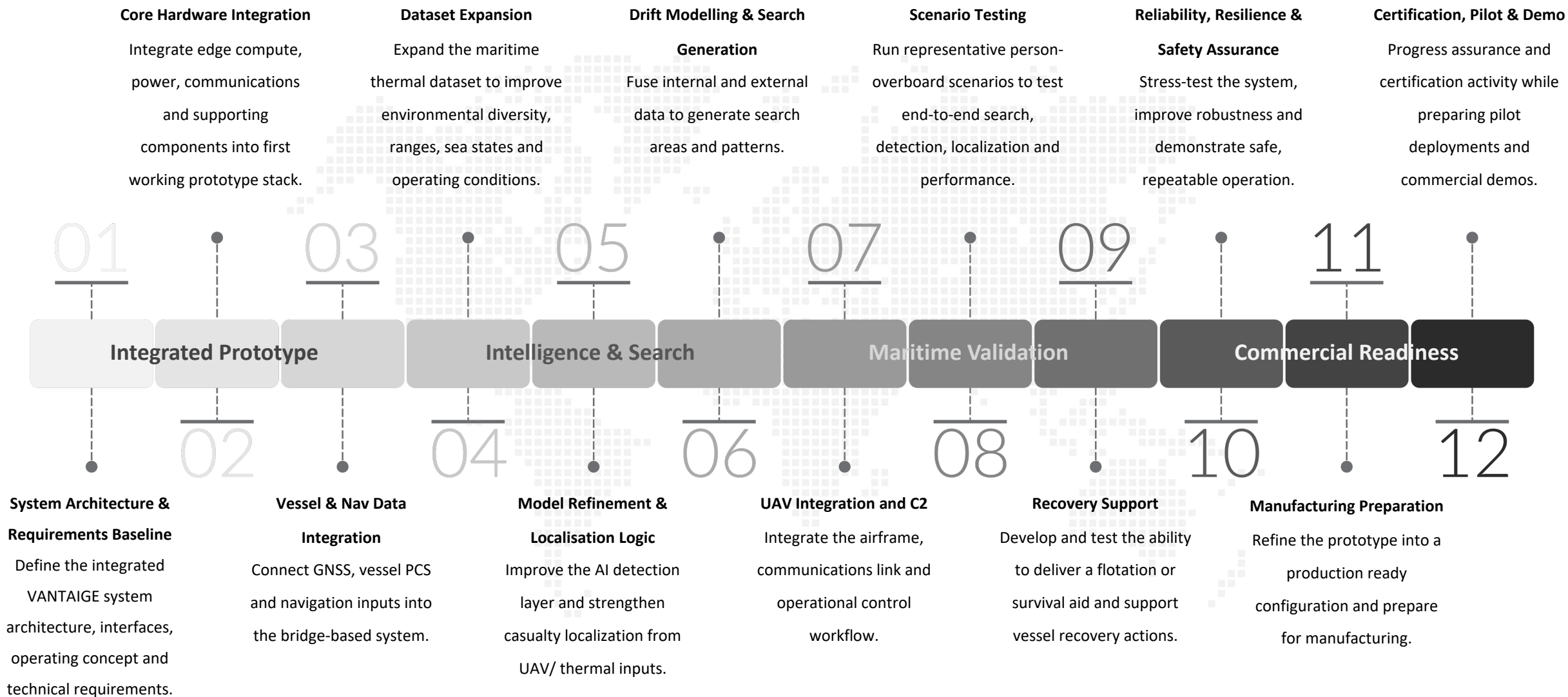
Pilot-Ready Commercial System

Pilot partners, safety case, assurance roadmap and production-intent requirements.

APPENDIX

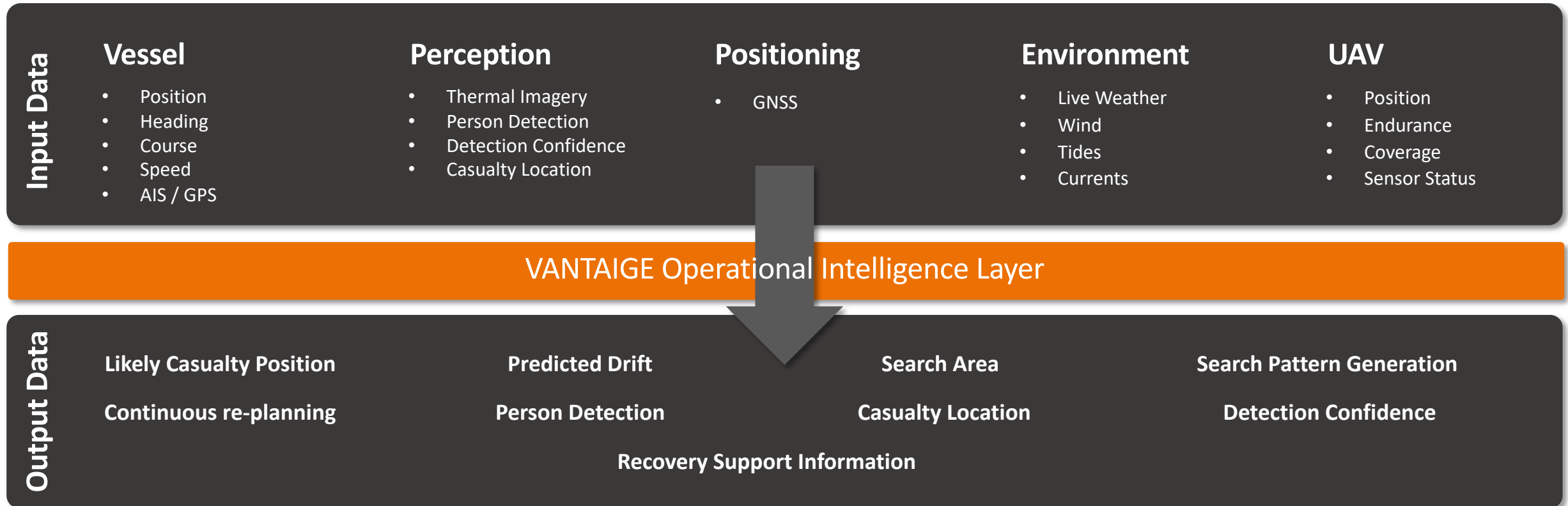
Technical, Commercial & Supporting Detail

Development Programme



Fragmented Data > Operational Picture

Multiple data streams – vessel navigation, independent positioning, live environmental data, UAV telemetry and thermal perception are fused into a single coherent operational intelligence layer that drives search planning, casualty localization and recovery support.



Not the drone. But the system itself deciding where and how to search.

Drones, thermal cameras, GNSS, weather data and vessel navigation systems already exist as separate tools. VANTAIGE's innovation is its deliberate integration into a system architected specifically around the first minutes of a person-overboard response – where time compression and data fragmentation are most acute.

Deterministic / Safety-Critical Logic

- Casualty drift calculations
- Search geometry and area definition
- Safety thresholds and operating limits
- Permissions and constraint enforcement

Safety-critical behaviour must remain explainable, controlled and testable at all times.

AI-Enabled Capability

- Thermal person detection
- Interpretation of operational context
- Prioritisation of sensor and positional information
- Search option assessment
- Continuous re-planning as evidence changes

AI augments decision-making. Deterministic layer enforces safe boundaries.

Finding the casualty is only part of the mission.

VANTAIGE is designed as an end-to-end response system. Detection triggers search planning. Localisation enables precise recovery. And an onboard aid-delivery capability provides immediate support while the vessel or SAR assets close on the position.

01

Search

Generate and continuously adapt search patterns using last known position, elapsed time, wind, tides, currents and vessel movement. Re-plan in real time as new information arrives and the situation develops.

02

Locate

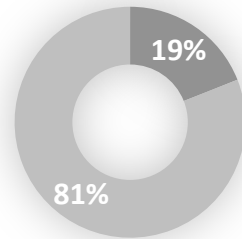
Thermal AI detection combined with aircraft positioning to establish the casualty's precise location. Communicate confirmed position back to the vessel and, where possible, to external SAR co-ordination.

03

Support

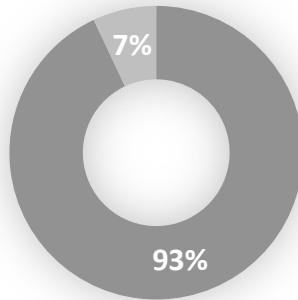
Develop UAV capability to carry and release a lightweight flotation or survival aid, providing the casualty with vital immediate assistance in the first moments of an incident while recovery assets approach.

Use of AI in Maritime Organisations



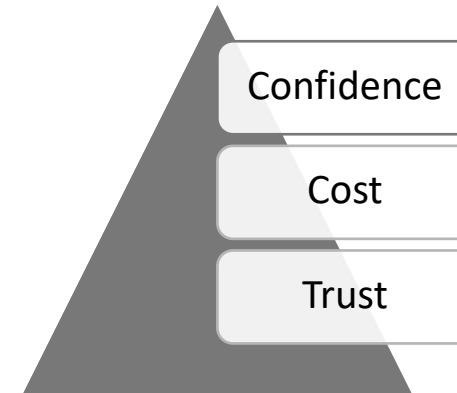
■ AI in Use ■ No AI

SAR Experience



■ Experience ■ No Experience

Barriers to Adoption



Most
Common
SAR
Challenge = **Finding the
Person**

A maritime safety capability with multiple commercial markets.

The initial commercialization strategy focuses on professional vessel operators where person-overboard risk and duty-of-care obligations are most acute. Commercialisation activity begins during the development programme through operator engagement, demonstrations and pilot deployments.

Commercial Shipping

Duty-of-care requirements and crew safety obligations make this a primary target sector for early adoption.

Defence & SAR

Naval and coast guard operators require an autonomous search capability that integrates with existing command structures.

Leisure Marine

Longer-term addressable market as system cost reduces and regulatory expectation of autonomous safety systems grows.

Offshore Energy

Crew transfer vessels, service vessels and offshore operations carry significant MOB risk and regulatory scrutiny.

Passenger Vessels

Passenger vessel operators face stringent safety requirements and reputational exposure following MOB incidents.

Workboats and Equipment Manufacturers

Integration partnerships with OEMs and system integrators provide a scalable route to market beyond direct sales.

Building the autonomous response layer for the first critical minutes of a person-overboard emergency.



Technical
Whitepaper

Tom Wilson MSc

£1.5M Pre-Seed | 24-month programme

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