Greyshark Series 2

BRAVO FOXTROT

GREYSHARK™
autonomous underwater vehicle

RETHINK UNDERWATER DEFENCE

THE FUTURE OF UNDERWATER RECONNAISSANCE

Today's complex naval operations are evolving fast. Emerging threats, contested maritime zones, and the growing vulnerability of subsea infrastructure demand a decisive shift towards autonomous capability.

GREYSHARK™ is a next-generation autonomous underwater vehicle (AUV), purpose-built for scale, across missions including reconnaissance, surveillance, and critical infrastructure protection among many others.

Co-developed by EUROATLAS and EvoLogics, ***GREYSHARK™*** offers extended mission endurance, swarm coordination, combat cloud integration and high-precision sensor intelligence. It is engineered to transition seamlessly between mission profiles, supporting both conventional defence operations and asymmetric environments.

GREYSHARK™ is the most versatile, multi-mission, high-endurance AUV in its class - positioned as both a tactical asset and a strategic force multiplier in the global shift toward unmanned maritime dominance.

SUPERIOR CAPABILITIES

ENDURANCE
Highest endurance in its class of up to 16 weeks

SPEED
Fastest AUV in its class with 10+ knots operational speed

RANGE
Longest range in its class with 1,100+ NM at 10 knots (8,000+ NM at 4 knots)

SIGNATURE
Low sonar cross-section

MANEUVERABILITY
Ultra low turning radius and capable of vertical dives

THE MOST VERSATILE, MULTI-MISSION,

GREYSHARK™
autonomous underwater vehicle

AUTONOMY
Intelligent control and real-time advanced adaptive navigation

SWARM
Swarm communication technology for coordinated missions

SENSORS
Most comprehensive state-of-the art sensor suite

AI PROCESSING
Powerful AI and data processing for operational decision making

HANDLING
Versatile launch, recovery and transport

HIGH-ENDURANCE AUV OF ITS CLASS

COMPREHENSIVE TECHNOLOGY SUITE

NAVIGATION

- / Long-Range Inertial Navigation [INS]
- / Doppler Velocity Logger [DVL]
- / EMW-Hardened Satellite Navigation [GNSS]
- / Obstacle Avoidance [OAS]
- / Underwater Acoustic Positioning [USBL]

COMMUNICATION

- / External Communication installed in Retractable Periscope:
  - / Tactical Military Radio
  - / Satellite Communication
- / Swarm Communication
- / Underwater Acoustic Communication

SENSORS

- / Electromagnetic Sensor Array [EMSA]
- / Multibeam Forward Looking Sonar [FLS]
- / Sound Velocity Sensor [SVS]
- / Laser Imaging and Measurement System [LIMS]
- / Multibeam Echosounder [MBES]
- / Synthetic Aperture Sonar [SAS]
- / Passive & Active Acoustic Sensors
  - Depth Sensors [DS]
  - Temperature Sensors [TS]

AI PROCESSING

- / Automatic Target Recognition [ATR]
- / Collision / Obstacle Avoidance [CAS, OAS]
- / Dynamic Mission Adjustments

MULTI-MISSION CAPABILITIES

***GREYSHARK™* is adaptable, cost-efficient, and designed for diverse operational needs**

CRITICAL UNDERWATER INFRASTRUCTURE (CUI) 8

- Inspection and surveillance of pipelines, cables, and subsea assets

INTELLIGENCE, SURVEILLANCE AND RECONNAISSANCE (ISR) 9

- Stealth intelligence gathering on enemy infrastructure and vessel activity
- Anti-submarine warfare (ASW)

PATROL OF OWN TERRITORIAL WATERS 10

- Active sonar operations to detect, deter, and drive out threats
- Real-time identification and movement profiling of targets

MINE COUNTERMEASURES (MCM) UNEXPLODED ORDNANCE (UXO) 11

- Detection and identification of hostile sensors and effectors as well as unexploded ordnance

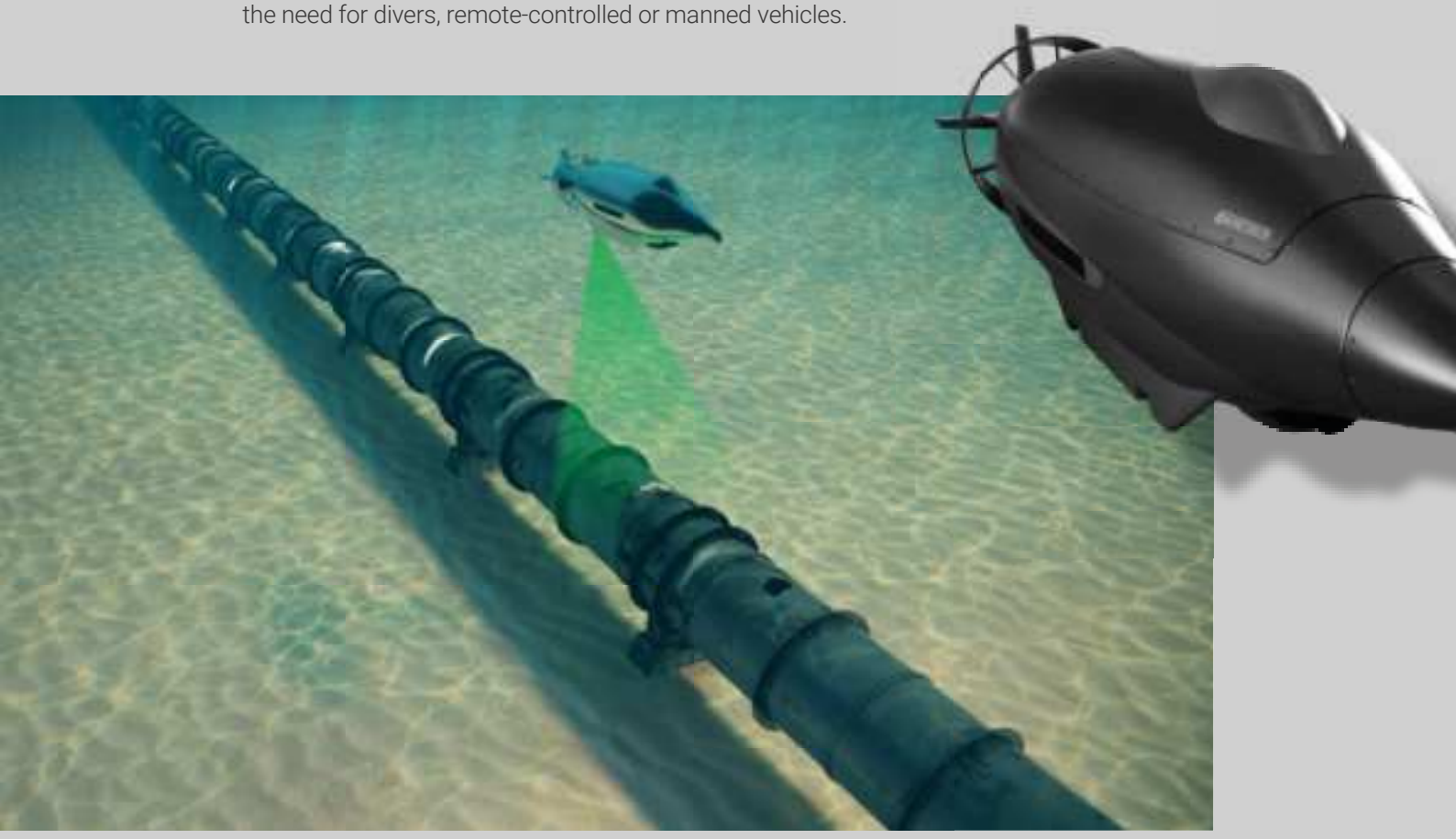
CRITICAL UNDERWATER INFRASTRUCTURE (CUI)

Ensure undersea domain awareness and protection

GREYSHARK™ fills a crucial gap in monitoring underwater infrastructure – such as pipelines, offshore platforms, and communication cables – by providing efficient, cost-effective observation to protect operational connectivity.

/ Survey infrastructure
/ Perform high-resolution LIMS scans with automatic change detection and pipeline following
/ Early detection of corrosion, damage, suspected sabotage and unauthorized vehicles
/ Ensure integrity of the critical infrastructure
/ Track and deter hostile seabed warfare assets

GREYSHARK™ accesses hard-to-reach areas fast, in harsh deep-sea conditions and reduces the need for divers, remote-controlled or manned vehicles.



INTELLIGENCE, SURVEILLANCE AND RECONNAISSANCE (ISR)

GREYSHARK™ enables stealth intelligence gathering, operating undetected to monitor and analyze adversary activity:

- **Conduct covert surveillance and stealthily gather data**
- **Categorize and identify vessels and their behaviors**
- **Create immediate warnings in case of security events**
- **Track hostile objects, sensors, effectors and vehicles (ASW)**

Military and security forces can monitor adversaries without revealing their own presence, gaining a strategic advantage in contested environments.

PATROL OF OWN TERRITORIAL WATERS

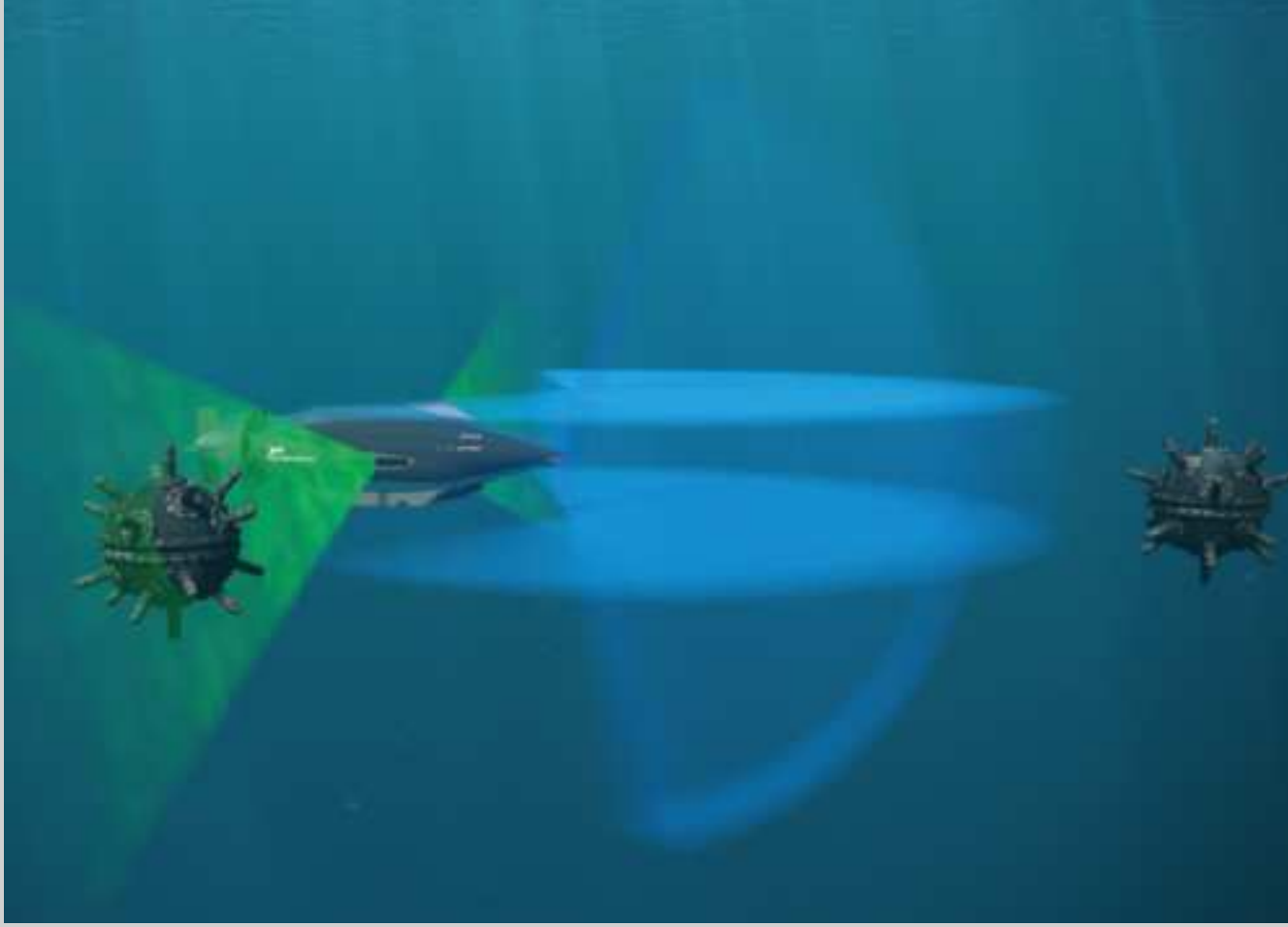
To secure transparency, freedom of navigation, and real-time situational awareness across own territorial waters, channels, harbors, and coastlines, a proactive approach is essential.

GREYSHARK™ provides continuous, real-time monitoring and active deterrence, supporting maritime security through:

- **Detect and track hostile objects, sensors, effectors and vehicles**
- **Map the area for operational awareness**
- **Spread out multiple *GREYSHARKs* in a dynamic swarm function**
- **Real-time automatic target recognition**

GREYSHARK™ can escort submarines, frigates, freighters, and tankers or function as an illuminator to expose threats. It also serves as a decoy, drawing attention away from high-value assets.

By reaching difficult or high-risk locations, ***GREYSHARK™*** enhances survivability and strengthens maritime security in contested environments.



MINE COUNTERMEASURES (MCM) UNEXPLODED ORDNANCE (UXO)

Safeguard sea lanes with risk-free and smart surveillance and countermeasures

GREYSHARK™ enables rapid, stealthy and risk-free detection of underwater sensors, effectors and objects. It disrupts enemy detection systems and protects strategic maritime routes:

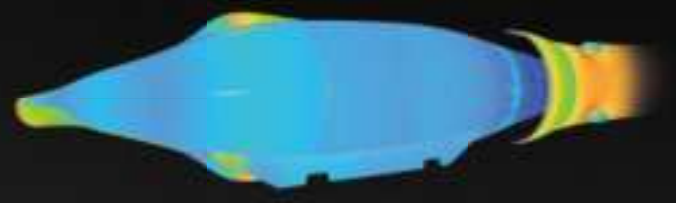
/ Search sensors, effectors, objects and unexploded ordnance
/ Map minefields
/ Transmit live data to operator & real time target reporting
/ Object recognition to detect mines
/ Keep track of changes indicating new threats

By operating autonomously for extended periods, ***GREYSHARK™*** keeps sea lanes open while reducing the risk to human divers and manned vehicles.

SUPERIOR DRIVING PERFORMANCE

Enabled by

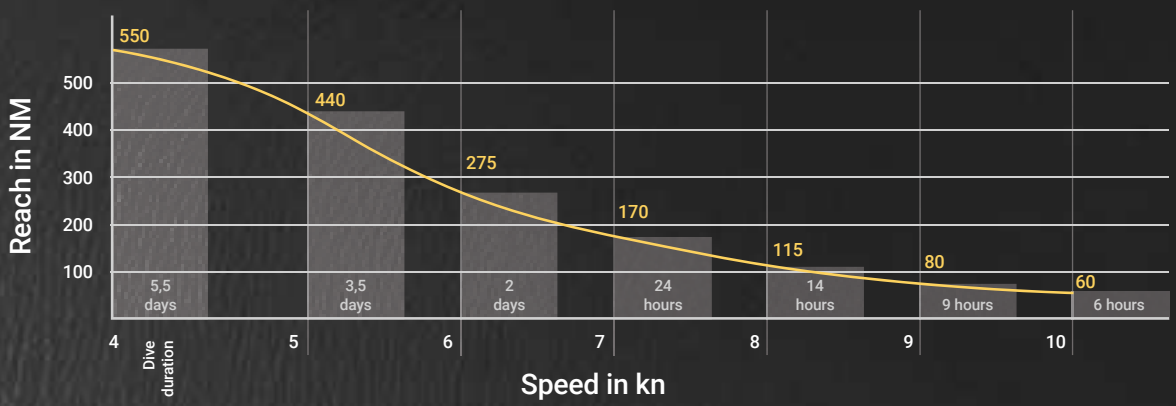
/ Pioneering high density liquid hydrogen drive train technology
/ Proprietary, highly dynamic design for superior agility



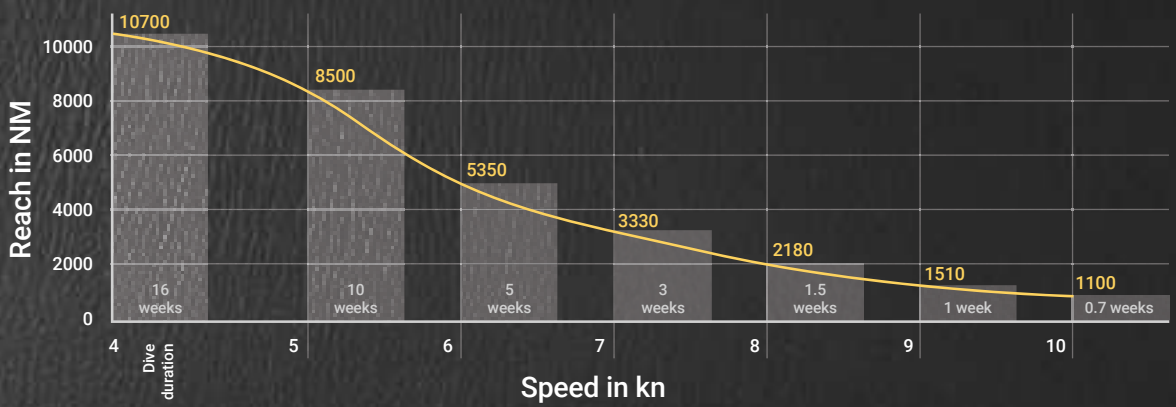
USER BENEFITS

/ Conduct effective operations, even in strong currents
/ Rapid response and early arrival at target areas
/ Track and deter unauthorized vehicles
/ Sustain multi-week missions with uncompromised performance. Up to 16 weeks of driving endurance.

BRAVO

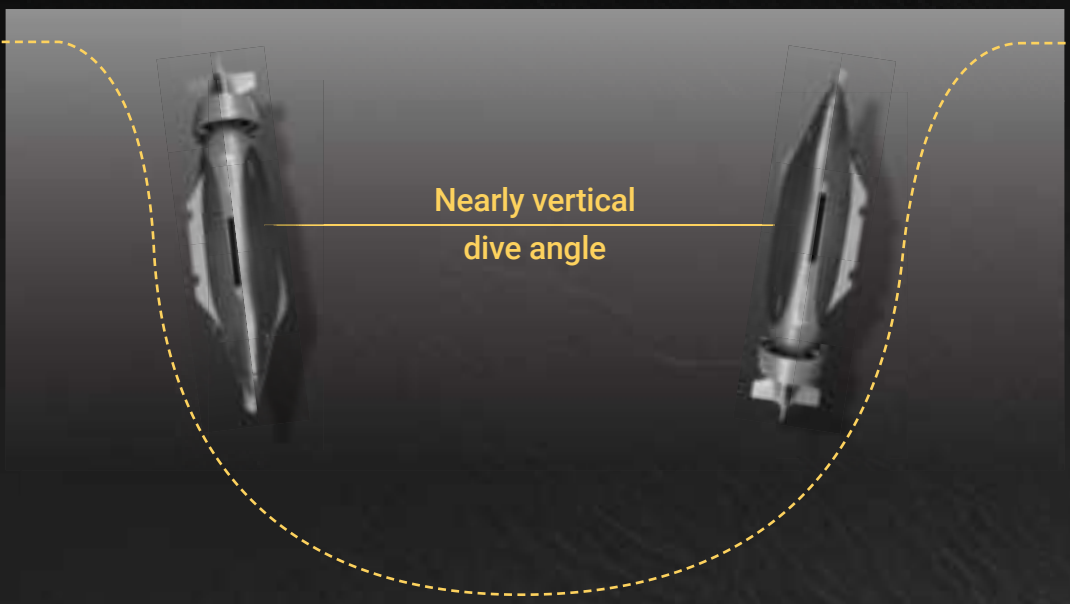


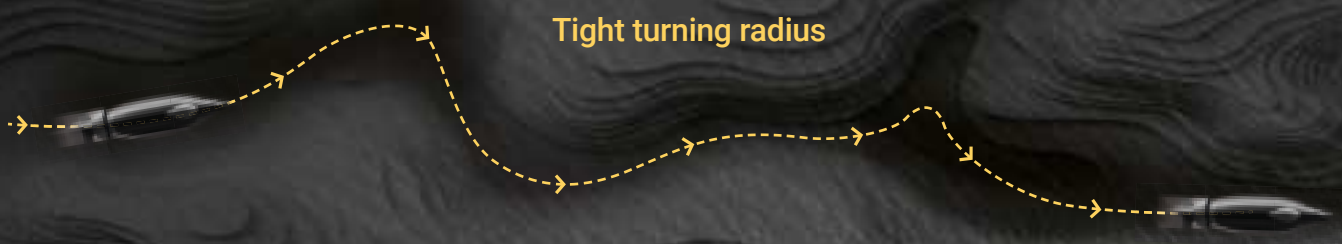
FOXTROT



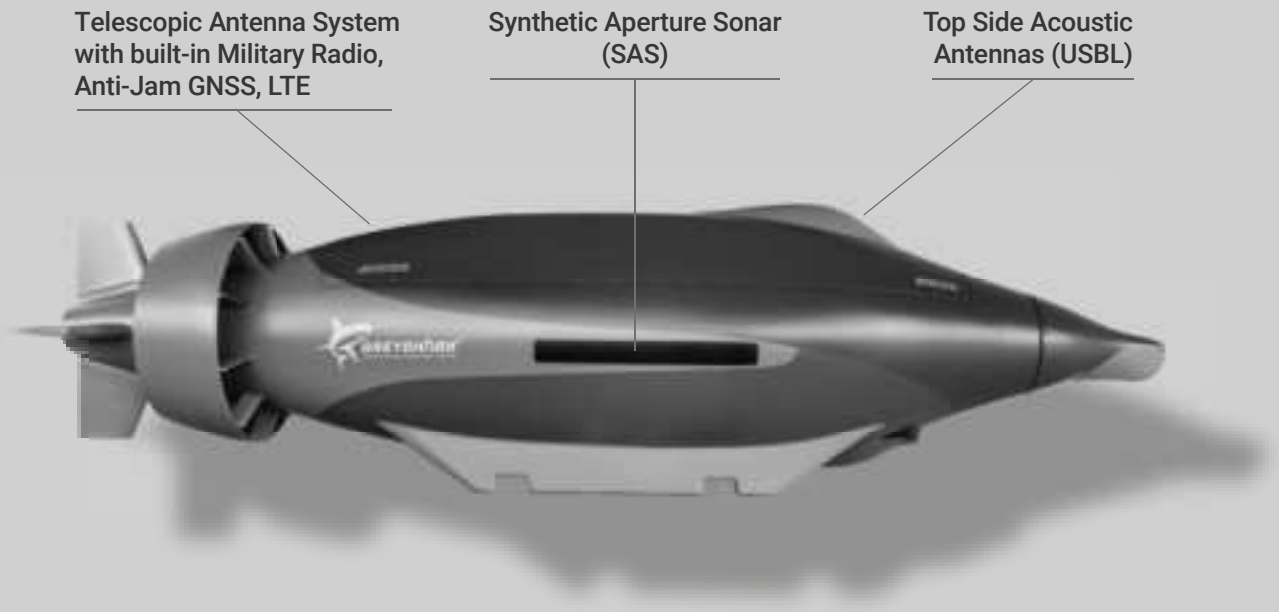
EXCELLENT MANEUVERABILITY

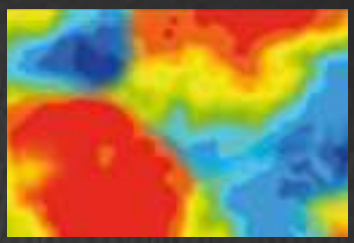
The design of ***GREYSHARK™*** offers an dive angle which allows a nearly vertical dive with high speed. With the tight turning radius, it has an extremely high agility and fluid maneuverability even in confined waters.





SENSORS





ELECTROMAGNETIC SENSOR ARRAY (EMSA)

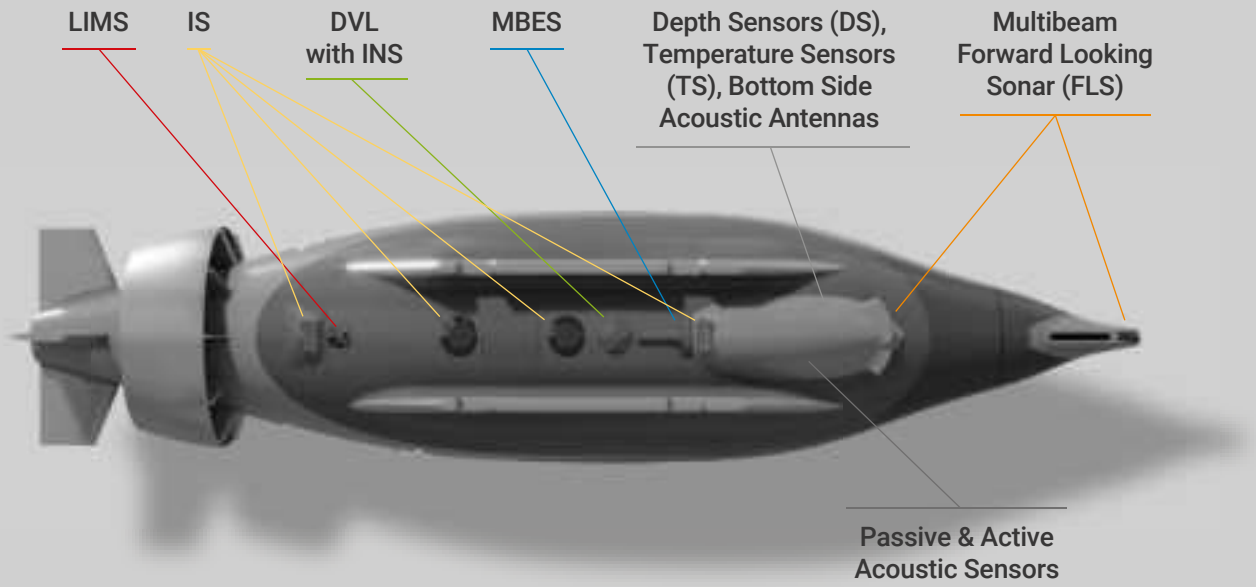
Multiple sensor system for detection and measuring electromagnetic fields

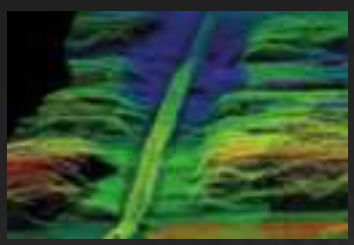
MULTIBEAM ECHOSOUNDER (MBES)

Advanced acoustic transducers array sonar system for providing high-resolution, wide-angle images of underwater environments

IMAGING SYSTEM (IS)

High resolution multi-spectral underwater camera system with LED cluster





LASER IMAGING AND MEASUREMENT SYSTEM (LIMS)

Underwater laser pulse system for 3D mapping with change detection modus

MULTIBEAM FORWARD LOOKING SONAR (FLS)

For detecting obstacles and collision avoidance

SYNTHETIC APERTURE SONAR (SAS)

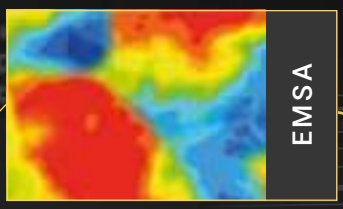
Side-scanning sonar system for ultra high-resolution sonar images

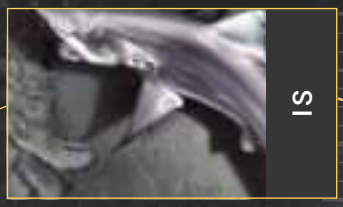
IS courtesy CATYX • LIMS courtesy basecampaviation.com • MBES courtesy NORBIT • SAS courtesy KRAKEN Robotics • MBS Courtesy of EvoLogics

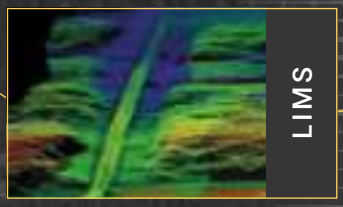
SENSOR FUSION AND PROCESSING

DATA COLLECTION

DATA FUSION







IS courtesy of CATHX • LIMS courtesy of basecampaviation.com • FLS courtesy of NORBIT • SAS courtesy of KRAKEN Robotics • MBES Courtesy of EvoLogics

DATA PROCESSING

ACTIONING

Length: 318 ft

Height: 37 ft

Below surface: 156 ft

Magnetic Anomaly

Detection: Steel Structure

Acoustic anomaly

Frequency range: 9-19 kHz

Position:
60° 24'42.1"N
3° 55'02.5"E
Bearing 090 degrees
Speed: 8 kn

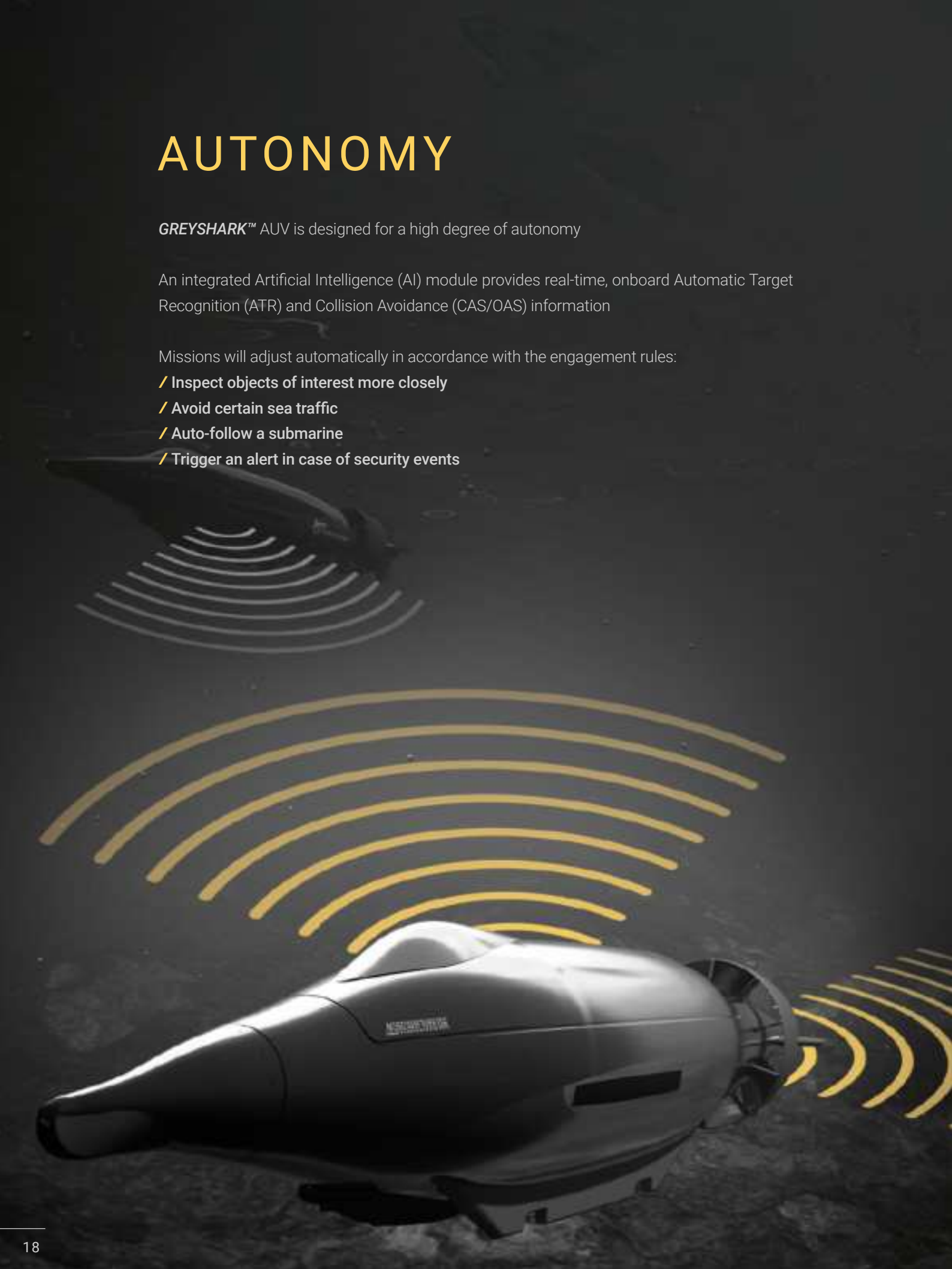
AUTONOMY

GREYSHARK™ AUV is designed for a high degree of autonomy

An integrated Artificial Intelligence (AI) module provides real-time, onboard Automatic Target Recognition (ATR) and Collision Avoidance (CAS/OAS) information

Missions will adjust automatically in accordance with the engagement rules:

- **Inspect objects of interest more closely**
- **Avoid certain sea traffic**
- **Auto-follow a submarine**
- **Trigger an alert in case of security events**



OPPORTUNITY TO INTERACT

A connection by underwater acoustics, satellite communication, or military radio is possible. It allows the sending and receiving of information and commands, as well as integration into networks.
Whenever mission-critical events demand it, ***GREYSHARK™*** will seek human intervention and decision making.

SWARM CAPABILITY

GREYSHARK™ enables interaction within a swarm that is live-connected and shares situational awareness.
During the scanning of an area, the swarm can split tasks among units and assume different roles. A number of swarm units can continue scouting in a predefined search area, while one or more units change their missions to inspect and identify objects of interest.

COMMUNICATION CAPABILITIES

Through continuous communication, a swarm of *GREYSHARK™* units will carry out missions in highly unstructured and unknown environments. *GREYSHARK™* simultaneously manages and synchronizes key tasks such as communication, navigation, path planning, and workload distribution.

GREYSHARK™ underwater acoustic communication (S2C) is crucial for effective naval operations, allowing reliable and secure data transfer between ***GREYSHARK™***, surface buoys, and command centers:

- **Quiet and difficult to detect**
- **Securely encrypted**
- **Simultaneous sharing of positioning (against other *GREYSHARK™*) and control data**
- **Highly compressed, allowing significantly greater network traffic than conventional protocols**
- **Operational range of up to 10 NM**
- **Real-time data exchange between *GREYSHARK™* units**
- **Self-learning and adaptive communication between units**

GREYSHARK™ real time data sharing seamlessly integrates into existing advanced communication infrastructures, enabling coordinated missions and joint operational capability with allied forces.

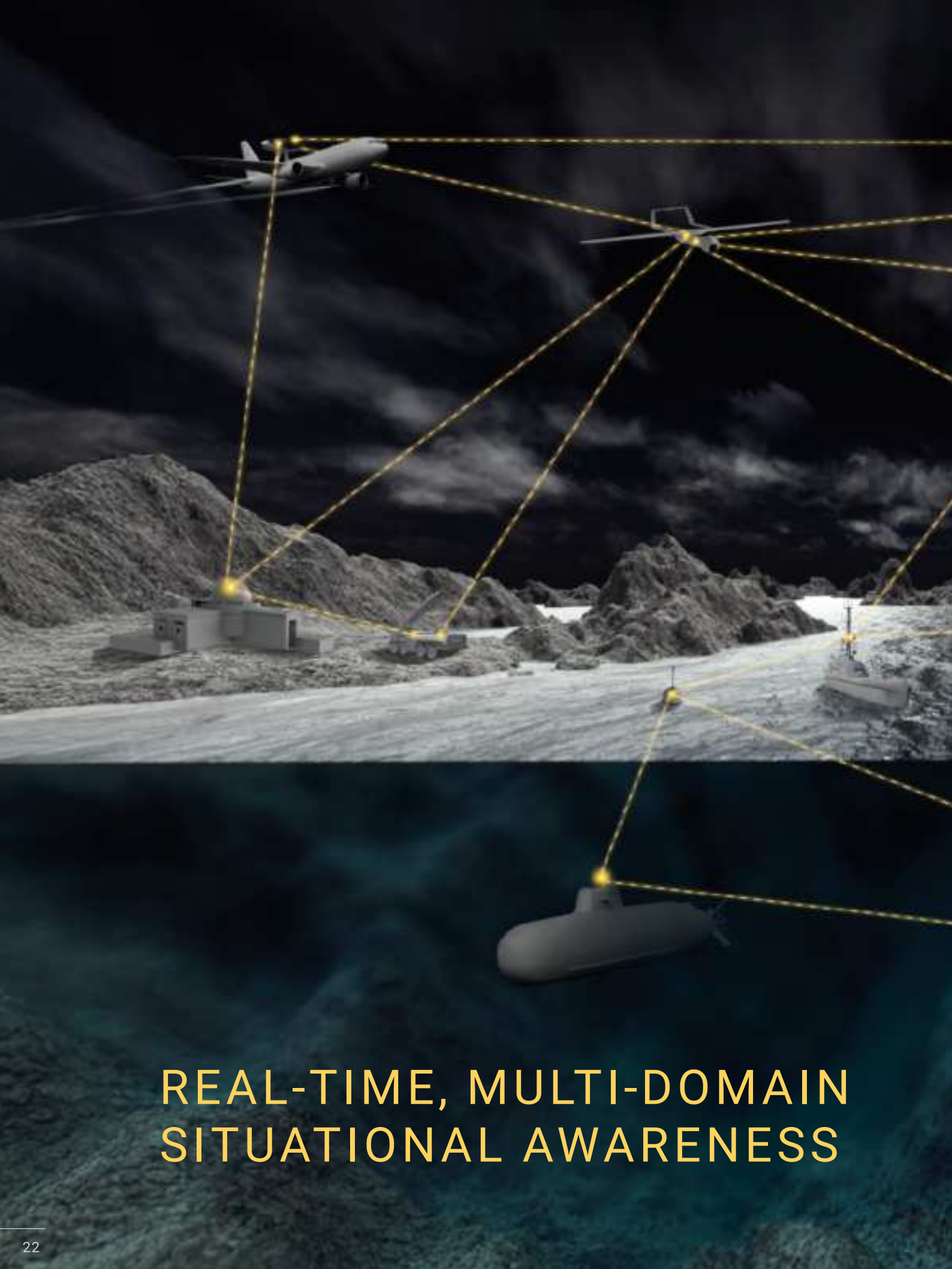
MULTI-DOMAIN COMBAT CLOUD AWARENESS

Modern conflicts require rapid decision-making and coordinated actions across multiple domains – sea, air, land, space, and cyber. The Combat Cloud ensures real-time, multi-domain awareness and seamless interoperability.

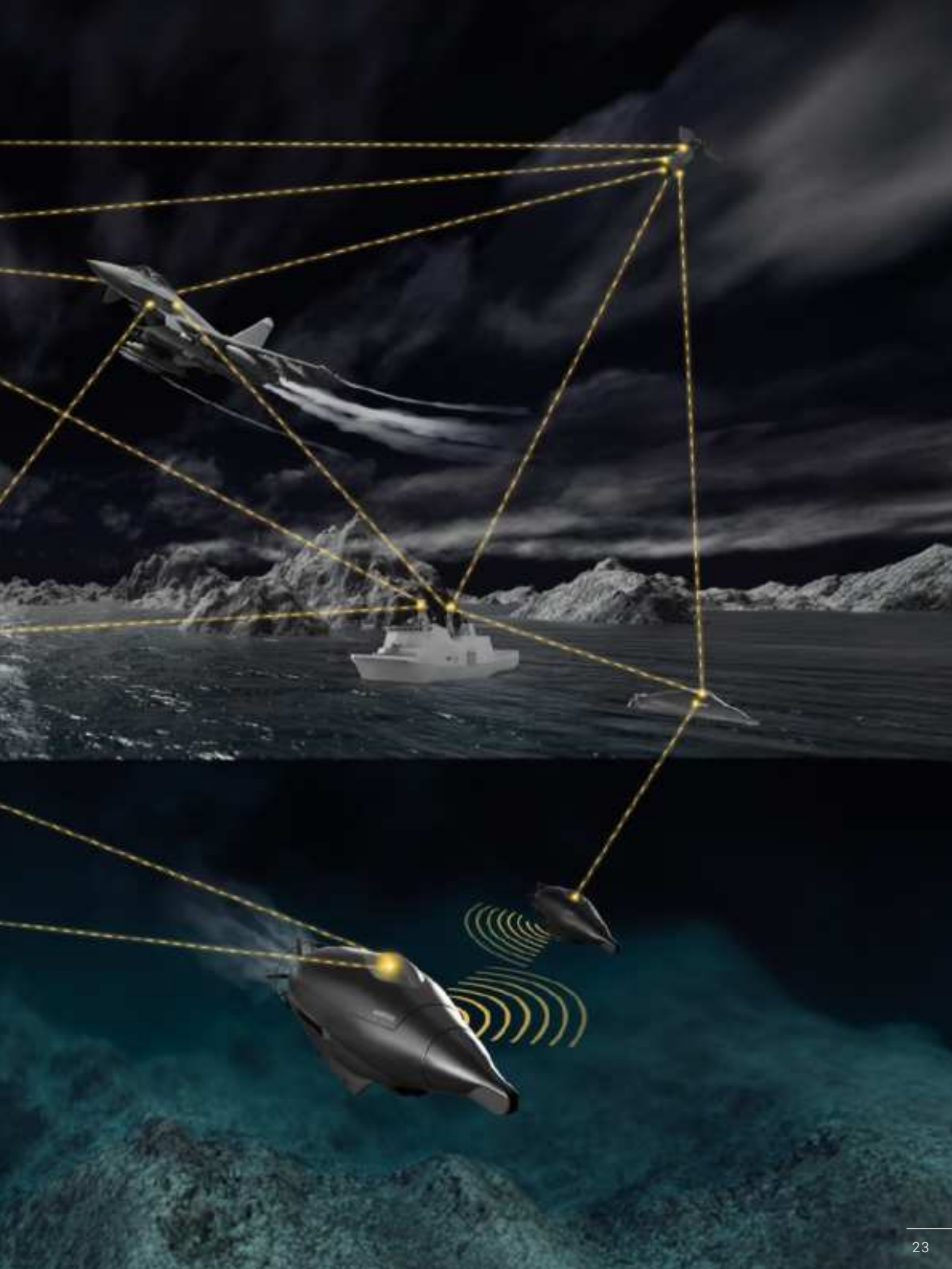
GREYSHARK™ enables true multi-domain interoperability, enhancing security, resilience, and collaboration across all operational environments. With its advanced AI and sensor integration, ***GREYSHARK™*** feeds real-time intelligence into a unified combat cloud infrastructure, ensuring:

/ Effective and reliable communication between units
/ Seamless integration into information networks
/ Real-time intelligence sharing for rapid collaborative responses

GREYSHARK™ integration into the Combat Cloud transforms individual assets into a powerful collective, significantly amplifying operational efficiency and tactical advantage.



REAL-TIME, MULTI-DOMAIN SITUATIONAL AWARENESS



STEALTH PROPERTIES

SONAR SIGNATURE
Flooded hull to help lower sonar cross section

ELECTROMAGNETICS
Fewer metal parts inside and a composite hull result in very low detectability

HYDRODYNAMIC SHAPE
Bio inspired hull for minimal water resistance

NOISE
The electric propulsion is designed with a low noise signature to reduce detectability

AUTONOMY
Intelligent features enable extended autonomous use without revealing its own position

GREYSHARK™
DESIGNED FOR LOW DETECTION

FLEXIBLE HANDLING, DEPLOYMENT AND INTEGRATION

AUV´s are essential tools for underwater missions. Traditional deployment methods can be complex, costly, and restrictive. ***GREYSHARK™*** user-friendly and customizable deployment options enhance accessibility and ease of use, mission efficiency and reliability.

GREYSHARK™ can be integrated into existing surveillance fleets.

PORT / CONTAINER / DRIVE-OUT RAMPS OF THE CONTAINER

Standardized container solution for transport, deployment and fueling

© PALFINGER MARINE

PORT / PIER / CRANE

Safe and quick water entry from port or pier with a crane or slip ramp

© Fassmer GmbH

VESSEL

Reliable deployment from a vessel even in challenging sea conditions – launching at the scene increases the duration of the operation

AUTO DEPLOYMENT AND RECOVERY SYSTEM

GREYSHARK™ can be released and recovered from aircraft, ship and truck/container

ACCESSORIES AND GLOBAL SHIPPING

To operate ***GREYSHARK™*** efficiently, it will come with a set of accessories for use and transport.

ACCESSORIES

/ Seabed Battery Induction Plate
/ Base Station
/ Underwater Communication and Tracking Station
/ Remote Hand Unit
/ Spare Part Set
/ Maintenance Package

CONTAINER

/ Transport and Deployment Container
/ Fueling Station

SHIPPING

/ Sea
/ Air
/ Rail
/ Road

Greyshark Series 2

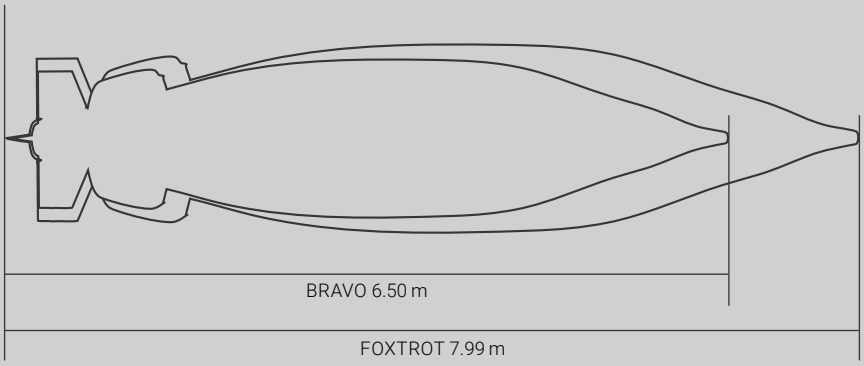
BRAVO FOXTROT

PERFECTLY ENGINEERED EFFICIENCY

TECHNICAL SPECIFICATION

Hull	Biological inspired shape with stream optimized outline
Hull length	BRAVO: 6.50 m FOXTROT: 7.99 m
Hull diameter	BRAVO: 1.75 m FOXTROT: 2.00 m
Weight	BRAVO: 3.5 t FOXTROT: 4.5 t
Extra payload	Optional
Drive train	BRAVO: Battery Electric Drive FOXTROT: Fuel Cell Electric Drive
Navigation	Long-Range Inertial Navigation [INS] Doppler Velocity Logger [DVL] EMW-Hardened Satellite Navigation [GNSS] Obstacle Avoidance [OAS] Underwater Acoustic Positioning [USBL]
Communication	External Communication installed in retractable periscope: - Tactical Military Radio - Satellite Communication Swarm Communication Underwater Acoustic Communication
Charging/fueling infrastructure required	Containerized refilling unit with part automatized refueling process
Engine	Non-permanent magnetic electrical ring motor

Propeller	Segmented ring rotor propeller
Diving depth	Step 1: 650 m Step 2: 4,000 m
Endurance	BRAVO: 10 kn | 60 NM | 6 hours 8 kn | 115 NM | 14 hours 6 kn | 275 NM | 2 days 4 kn | 550 NM | 5.5 days FOXTROT: 10 kn | 1,100 NM | 5 days 8 kn | 2,180 NM | 1.5 weeks 6 kn | 5,350 NM | 5 weeks 4 kn | 10,700 NM | 16 weeks
Operating Speed	10 kn optimized
Max Speed	>12+ kn
Sensors	Electromagnetic Sensor Array [EMSA] Multibeam Forward Looking Sonar [FLS] Sound Velocity Sensor [SVS] Laser Imaging and Measurement System [LIMS] Multibeam Echosounder [MBES] Synthetic Aperture Sonar [SAS] Passive & Active Acoustic Sensors Depth Sensors [DS] Temperature Sensors [TS]
Mode of transport	1 pc Standard 40 ft container for GREYSHARK with winch and transportation 1 pc Standard 40 ft container refueling unit Standard containerized solution for transport by truck, train, air and sea freight



EUROATLAS

EUROATLAS, located in Bremen, has extensive experience of 60+ years in the submarine sector, providing innovative and reliable solutions for underwater missions worldwide.

Decades of experience in developing high-efficiency and robust power conversion solutions for critical applications results in cutting edge products that withstand extreme environments, ensuring operational reliability.

We have leveraged our experience in developing complex and customized solutions to enable the overall performance of ***GREYSHARK™***.

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EvoLogics

EvoLogics, located in Berlin, brings 25 years of experience in maritime high-tech, underwater robotics, data and positioning networks, sensor arrays, and AI capabilities.

The team ensures autonomous mission controls, onboard edge computing, advanced underwater navigation, precise, accurate data collection, sensor fusion, and AI functionality.

These systems enable enhanced situational awareness and decision-making capabilities for ***GREYSHARK™***.

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RHEINMETALL

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VERSATILE MULTI-MISSION ENDURANCE

EUROATLAS + EvoLogics

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