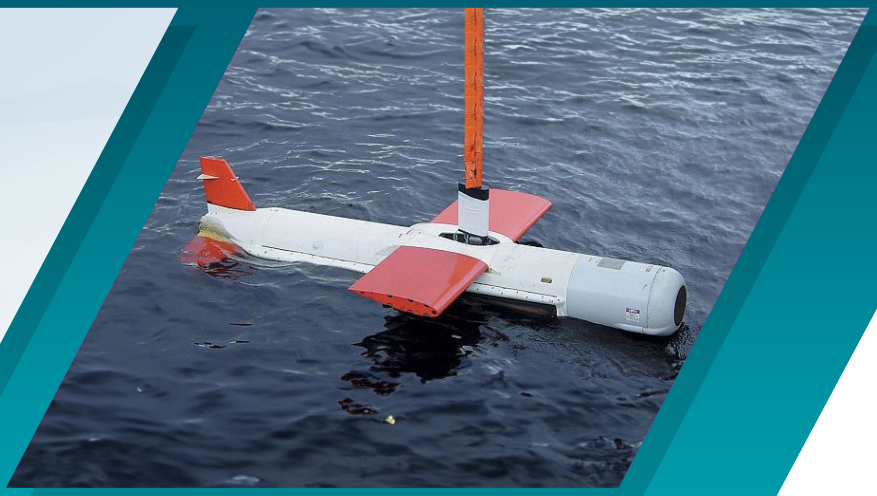
MARITIME SENSOR CAPABILITIES

Areté is an advanced science and engineering Employee-Owned Small Business that provides innovative sensing solutions — from scientific discovery through prototyping to production. Areté's systems include active and passive sensors, real-time processing, software, and complex algorithms that operate from seafloor to space.

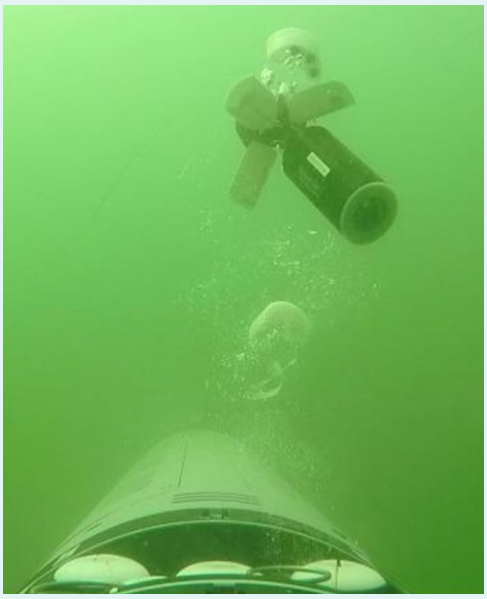


Areté

DISCOVER. DEVELOP. DELIVER.

PILLS – Pushbroom Imaging LiDAR for Littoral Surveillance

- **TRL:** 9
- **Discriminators:** Low-SWaP, high resolution, high accuracy.
- **Production:** Currently low-rate, can ramp up.
- **SWaP:** 40” l x 11” w x 8” h, installed 45 lbs, 224W.
- **Status:** ONR and NAVAIR test bed and commercially used by Fugro (RAMMS).
- **Description:** PILLS is a low-SWaP airborne LiDAR providing bathymetric capabilities utilizing Arete’s Streak Tube Imaging LiDAR (STIL) technology. Provides high-resolution seabed mapping compliant with Commercial IHO 1A standards to enable precise characterization of the maritime environment for navigation, mission planning, and IPOE.



EDEX – Expendable Data Exfiltration

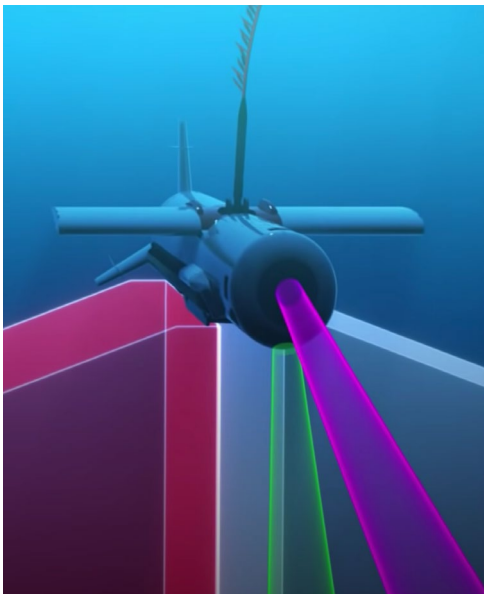
- **TRL:** 8
- **Discriminators:** Platform-agnostic, covert data exfiltration device and salvage tag. Deep water variant is available.
- **Size:** 6.5” h x 1.75” diameter. Self-powered.
- **Status:** SBIR Phase III with ONR.
- **Description:** EDEX acquires data from the underwater platform’s interface electronics wirelessly. EDEX ascends to the surface and delivers data either via SATCOM or RF line of sight and then scuttles.

STRIDR – Sea-Trekking Rechargeable Instrumented Drifter

- **TRL:** 8
- **Discriminators:** Low cost, customizable rechargeable sea drifter.
- **Production:** Full rate.
- **Size:** 16" h x 5” diameter (folded), 6.6 lbs., 84 Wh. Self-powered.
- **Status:** Qualified by DARPA, not currently deployed.
- **Description:** The STRIDR™ system is a small, low-cost Lagrangian drifter with a customizable suite of sensors and on-board processing that produces a variety of environmental measurements.

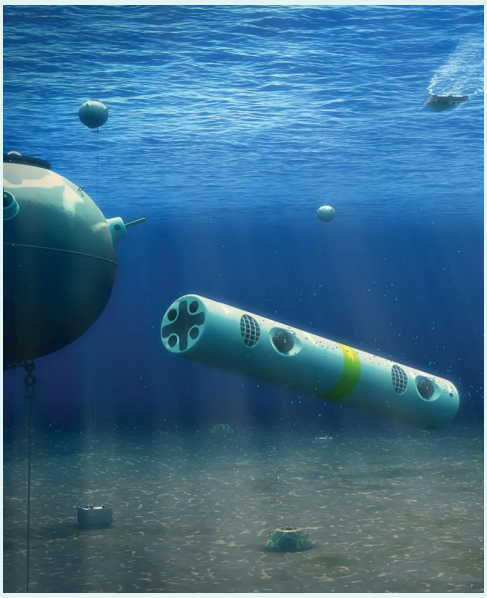
Mk18 ASP – Mk18 Advanced Sensor Package

- **TRL:** 9
- **Discriminators:** Low false alarm rate, mine and obstacle ATR.
- **Production:** Currently in production.
- **Status:** Deployed with the U.S. Navy.
- **Description:** The MK18 Family of Systems (FoS) Advanced Sensor Package (ASP) integrates the ATLAS Forward Looking Sonar, SSAM Synthetic Aperture Side-Scan Sonar, and the V-ATR Common Module (VCM). These sensors provide multi-modal imagery supporting automatic detection, classification, and identification of mines, obstacle avoidance, and large-area coverage for Intelligence Preparation of the Operational Environment (IPOE). ASP includes on-board ATR and automated mission planning to enable autonomous MK18 operations and long-distance C2 and data exfiltration. Areté serves as the Transition Partner for ASP.



AN/AQS-20 Electro-Optic Identification (EOID) Sensor

- **TRL:** 9
- **Discriminators:** Undersea minehunting sonar system with Arete's EOID LiDAR.
- **Production:** 40 EOID LiDARs delivered to Raytheon IDS.
- **Size:** 15.5" in diameter.
- **Status:** Deployed with the U.S. Navy, IOC in 2019.
- **Description:** The AN/ANQS-20A mine hunter is designed for the detection, classification, localization, and identification of sea mines. Areté supplies the EOID and underwater Streak Tube Imaging LiDAR (STIL) assembly used for target identification.



Barracuda ATR Algorithms, EO Processor

- **TRL:** 7
- **Discriminators:** Low SWaP, embedded video ATR.
- **Production:** LRIP.
- **Status:** EDM manufacture.
- **Description:** The Barracuda mine neutralizer provides a low-cost mine clearance capability on the MCM USV to provide rapid reacquisition, identification, and neutralization capability of sea mines from seafloor to surface. Areté provides the Electro-Optic Processor (EOP) and associated ATR algorithms.

AMSI – Areté Multispectral Imager

- **TRL:** 7
- **Discriminators:** Unmanned, real-time, multispectral, high-resolution passive imaging; large-area search capability; automated surf-zone mine-like object detection.
- **Production:** Development system; upgraded from the COBRA M11 gimbal with new multispectral imager and enhanced real-time on-board processing units.
- **Status:** Integrated into Areté's Maritime Unmanned ISR Section and demonstrated on the Schiebel S-100 CAMCOPTER®. Currently TRL 7 for automated surf-zone detection.
- **Description:** AMSI is a passive RGB sensor with a real-time processing unit for unmanned aerial reconnaissance in littoral environments. It detects and localizes mine-like objects near the water's surface in the surf zone, and modernizes the proven COBRA M11 gimbal with a new RGB imager and enhanced on-board, real-time processing.

ALMDS – Airborne Laser Mine Detection

- **TRL:** 9
- **Discriminators:** High search area, active imaging, low false alarm rate.
- **Production:** 30 systems produced.
- **SWaP:** Single pod, 107” length, 21” diameter, 850lbs.
- **Status:** Deployed with the U.S. Navy, IOC in CY2016 and some allied navies.
- **Description:** ALMDS is a laser-based AMCM system that uses StreakTube Imaging LiDAR (STIL) to detect, classify, and locate surface and near-surface moored sea mines during day or night operations. Areté supplies the Receiver Sensor Assembly, which includes the STIL sensors, laser timing electronics, and transmit optics. It is integrated on the MH-60S and MCH-101 helicopters to provide rapid, wide-area reconnaissance and assessment of mine threats in littoral regions.

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