Areté

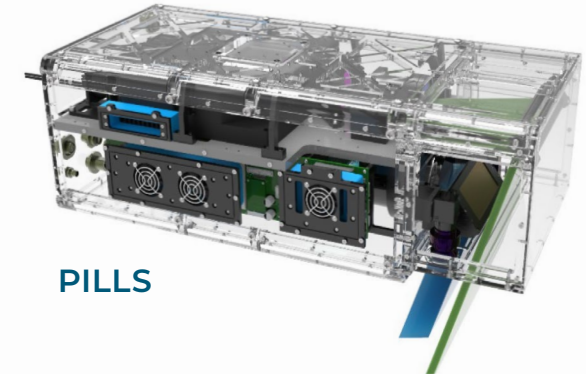
PILLS

Pushbroom Imaging LiDAR for Littoral Surveillance

The Pushbroom Imaging LiDAR for Littoral Surveillance (PILLS) system was jointly developed by ONR and NAVAIR under SBIR funding to provide airborne LiDAR bathymetric and target detection capabilities utilizing Areté's Streak Tube Imaging LiDAR (STIL) technology. The PILLS system has gone through three defense related iterations resulting in increased resolution, increased dynamic range, on-board real-time processing, and increased pulse rate frequency (PRF) through scalable laser modules. The PILLS system has flown on nine different commercial aircraft to date. Additionally, Unmanned Aerial System (UAS) flight tests have been completed on both the Seahunter UAS and the Schiebel CAMCOPTER® S-100. The S-100 is currently used by 45 countries and its small footprint provides a substantial payload capacity (110lbs.), power (1kw), and volume, without requiring additional launch or recovery equipment for land or ship-based operations.

Capabilities

- Commercial International Hydrographic Organization (IHO) 1A Mapping
- Tactical Bathymetry
- Target Detection



PILLS

Areté | 9301 Corbin Ave. Northridge, CA 91324 | arete.com
POC: Eric Korpie, (818) 339-3347 | ekorpie@arete.com
Business POC: Jay Rouse, (571) 255-4035 | jrouse@arete.com

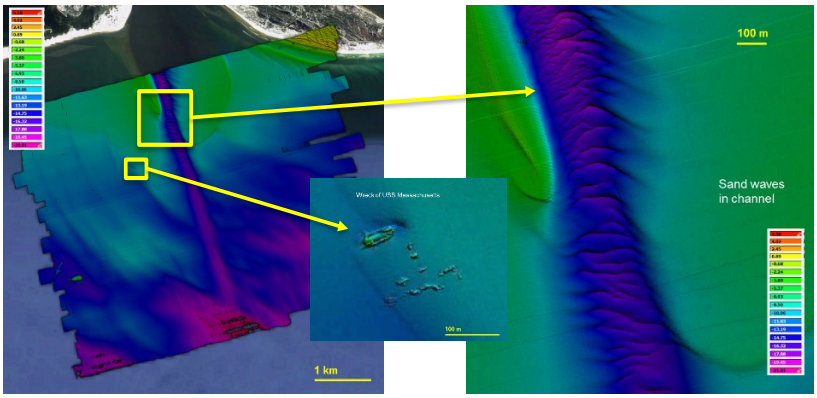
Areté

Low SWaP-C Tactical Airborne LiDAR

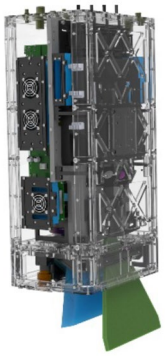
The PILLS program developed a series of advanced low Size, Weight, Power, and Cost (SWaP-C) LiDAR systems for hydrographic survey and target detection mission capabilities. Designed to be compatible with tactical class Unmanned Aerial Systems (UAS), while simultaneously achieving the International Hydrographic Organization's (IHO) accuracy and depth standards (Standard 1A). The sensor has opened a new niche in small, airborne, depth penetrating LiDARs.

Commercialization of PILLS Technology

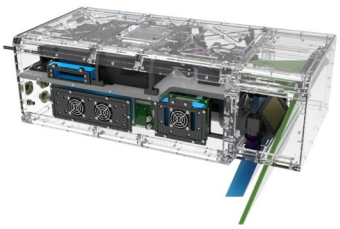
In 2018, Areté in collaboration with Fugro, USA, a commercial hydrographic mapping company, customized the PILLS technology for commercial use. The reduced SWaP-C, efficient swath coverage, comparable depth penetration, and equivalent accuracy to existing commercial LiDARs made the PILLS technology attractive to the commercial sector. Fugro has multiple systems fielded under the commercial moniker Rapid Airborne Multibeam Mapping System (RAMMS).



PAV30



UAS Compatible



Specifications

Configurable form factors, with mass characteristics driven by the user defined feature set and customization parameters

Size	40" x 11" x 8" (LHW) – 29.5" x 14" x 14.5" (LWH)
Volume	4350-5989 in^3
Weight	45-87 lbs
Power	300-420W
Pulse Rate Frequency	30-120Hz
Energy per pulse	55mJ
Pulse Width	5.6ns
Wavelength	532nm
Onboard Processing	2 NVIDIA Jetsons
Swath	0.9x altitude
Cross Track Sampling @ 300m Altitude	0.21-0.43m
Along Track Sampling @ 300m Altitude	0.25-0.31m
Depth Penetration	20-60m depending on conditions
Point Density	25k-100k point/sec
Field Of View	45°
Platform Speed	10-200 knots
Area Search Rate	UAS: 12 mi^2 (31 km^2)/hr
Environmental Temperatures	-20°C to +50°C

Areté | 9301 Corbin Ave. Northridge, CA 91324 | arete.com
POC: Eric Korpie, (818) 339-3347 | ekorpie@arete.com
Business POC: Jay Rouse, (571) 255-4035 | jrouse@arete.com