

WHO

SYSCOM: NAVAIR

Sponsoring Program: PMA-263

Transition Target: Software as a Service (SaaS) available for individual scenario purchase or license.

TPOC: (301) 342-3728

Other Transition Opportunities:

- (1) Turnkey AnTrust-produced small Unmanned Aircraft Systems (sUAS) with integrated Synthetic Aperture Radar (SAR) sensing, feeding off-board PACDLE processing.
- (2) Aircraft platforms with real-time SAR sensing and on-board PACDLE processing, transitioning via software licensing, or hardware implementations.

Notes:

The image on the right depicts the utilization of SAR data captured with a diversity of platforms with random and nonrepeating flight geometries. AnTrust's Phase II program focuses on the development of the PACDLE software technology into a SaaS offering. Phase III embodiments can include implementation onto turnkey sUAS systems, in addition to an embedded solution into prime contractor radar systems as a cyber-secured SOSA-aligned compute card for edge processing.

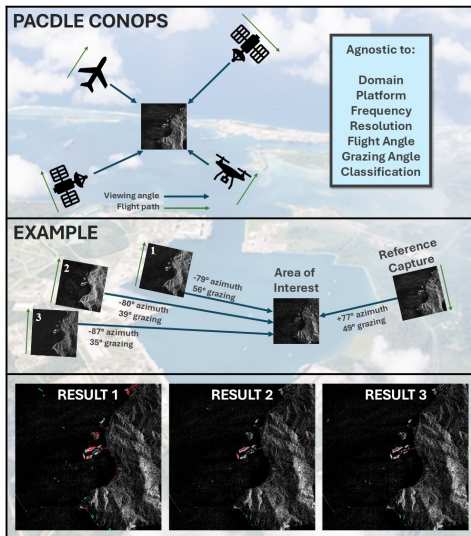


Image courtesy of AnTrust (2024) with SAR image data Captured by Umbra, Delivered by SkyFi. Background photo courtesy DVIDS.

WHAT

Operational Need and Improvement:

Modern synthetic aperture radar (SAR) enables change detection over a target scene. Current change detection techniques require flying the same flight path repeatedly to detect changes – acceptable in a benign environment, potentially lethal in a contested environment. Platform Agnostic Change Detection for Littoral Environments (PACDLE) is AnTrust's algorithmic improvement to this operational need, to detect changes using SAR data from sensing platforms using random and arbitrary flight paths. PACDLE technology delivers precise and actionable all-weather detections of changes at a significantly less lethality risk to the warfighter and air vehicle, yielding a quicker time to decision and action.

Specifications Required:

PACDLE ingests a target scene's SAR response, measured from a variety of source platforms, including sUAS, UAS, manned, or spaceborne. The flight paths of these platforms are known – yet are not constrained in any manner, allowing random and nonrepeating reconnaissance. The change detection results are automatically screened to determine actionable changes. Real-world challenges such as registration errors and motion compensation in GPS-denied environments are mitigated.

Technology Developed:

Platform Agnostic Change Detection for Littoral Environments (PACDLE) is an algorithmic technology which enables agnostic change detection, accepting data from a variety of platforms. PACDLE-powered algorithms and products deliver actionable Maritime Domain Awareness (MDA) and threat evaluations by analyzing SAR observations from sources regardless of domain, platform, frequency, resolution, flight angle, grazing angle, and classification. This embodiment of the solution is optimized for the Navy's MDA of littoral environments.

Warfighter Value:

PACDLE technology delivers precise and actionable all-weather detections of changes at a significantly less lethality risk to the warfighter and air vehicle. The analysis time to implement an action or decision is significantly decreased through the acceptance of a wider range of sensor data and less constrained flight geometries.

WHEN

Contract Number: N68335-24-C-0224

Ending on: Mar 05, 2026

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Complete first release of PACDLE software.	Low	PACDLE Minimum Viable Product completed, ready for user evaluation.	4	3rd QTR FY25
Controlled Experiment conducted in a littoral region.	Medium	Produce accurate validated data based upon ground truth.	5	4th QTR FY25
Experimental Test of PACDLE from an airborne platform.	Medium	Produce accurate validated data based upon ground truth, with real-world mitigations.	6	1st QTR FY26
Operational Test of PACDLE in real-time during a fielded demonstration.	High	Produce accurate validated data with real-world mitigations, in an uncontrolled demonstration, all in real-time.	7	1st QTR FY27
PACDLE SaaS product released.	Low	PACDLE ready for open market sales.	8	2nd QTR FY27

HOW

Projected Business Model:

By the end of Phase II, a PACDLE-powered SaaS offering will be openly available for purchase. AnTrust will expand sales through software licensing to radar prime contractors and through a PACDLE-powered SOSA aligned compute card, to be funded under a Phase III contract. Commercial embodiments will also be separately developed for AnTrust-produced sUAS solutions.

Company Objectives:

AnTrust will complete development of the PACDLE technology during Phase II, and will validate with a flight experiment. During the Option period, we will participate in an operational fielded demonstration and test to facilitate transition sponsor awareness. AnTrust will also seek additional funding, including as a Phase III, to develop cyber-secure turnkey hardware products running our embedded software.

Potential Commercial Applications:

- PACDLE's technology could be commercialized into several possible embodiments:
 - (1) Mapping and surveying changes to target changing agriculture conditions, to monitor soil moisture and other climate changes.
 - (2) Identifying of changes, undeterred by cloudy and smoky conditions, by first responders and homeland security evaluating disaster areas affected by flooding and hurricanes.
 - (3) Enhancement of DHS Border Patrol radar systems for change detection of drug traffic monitoring and perimeter surveillance, during day and night.

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