

# NAVY Transition Assistance Program

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N07-019 - Advanced Coherent Technologies, LLC

Low Cost Whale Detection and Monitoring with Optics

## NEED & CUSTOMER REQUIREMENT

**Need:** Several electro-optical (EO) sensor systems are currently being used in various remote sensing applications such as surf zone and shallow water mine countermeasures, maritime search and rescue and marine mammal detection and tracking. An EO automatic detection and confirmation capability can be added to current EO systems with minimal or no increase in cost, manpower, or size.

**Value to the Warfighter:** A flexible multi-channel imaging system provides the warfighter with access to imagery tailored to reveal targets of interest.

**Operational Gap:** Current EO systems are limited in detection capability and multi-spectral systems lack flexibility to merge polarization with spectral information and lack the ability to produce real-time detection information.

**Customer Specifications:** Five Channels, three of which have 1.5 Megapixels, 12 bit Dynamic Range, Up to 20 Hz. Uncooled 640x480 long wave infrared camera at 12 bit 30 Hz. High definition video with 32x zoom. Low Cost, Low Volume, Low Power

**Technology Description:** The Advanced Coherent Technologies Multi-channel imager (MCI) provides five channel imagery. Each channel is configured independently depending on mission requirements. Channel content can consist of any narrowband interference filters, polarization analyzers and various focal lengths or camera frame rates. The optimized channels are simultaneously collected and combined using a set of target detection algorithms. In maritime imaging of marine mammals for example, the optimum system uses three spectral channels for detection and classification in daylight and one Infrared (IR) channel for detection at night. In addition, a zoom video channel is used for daylight animal identification.

## TECHNOLOGY DEVELOPMENT MILESTONES (SBIR/STTR)

Milestone	TRL	Risk	Measure of Success	TRL Date
Prototype Sensor Head Complete	6	Low	Successful flight test	October 2000
Prototype FPGA Processor Complete	4	Moderate	Integration with sensor head	December 2009
Complete System flight demo	4	Moderate	Real-time detection and tracking of marine mammals	February 2010
Ruggedized system flight demo	6	Moderate	Airborne real-time detection and tracking of marine mammals	August 2010
Delivered system integrated onto NAVAIR aircraft	6	Moderate	Functional Marine Mammal detection and tracking system	October 2010

**Open contract:** N6833508-C-0139 ending May 2010

## SPONSORSHIP of original SBIR/STTR Topic

**SYSCOM:** NAVAIR

**Transition Target:** PMA-264

**Original Sponsoring Program:**  
PEO (A)

**TPOC Phone Number:**  
301-342-0043



## TECHNOLOGY TRANSITION OPPORTUNITIES (PHASE III)

### Other Potential Applications:

Alternate applications include unmanned aerial vehicle (UAV) based military surveillance, search and rescue, submarine or semi submersible detection and tracking and basic research in imaging spectroscopy. An additional opportunity is from large aerospace corporations, such as Boeing and Northrop Grumman, who have large programs to build platforms such as Northrop's Firescout UAV.

### Business Model:

A low cost / low volume turreted EO system will be developed and demonstrated in this effort which will show military utility and possible direct transition into unmanned aircraft systems' (UAS) surveillance programs. The ability for this system to be tailored easily to multiple mission expands the transition potential to civil (ie. search and rescue), commercial (ie. Oil and Gas) and additional military applications.

### Objective:

To demonstrate the potential to add value to multiple military, commercial, and civilian operation using our low cost/ low volume spectral imagery. To develop a market for small UAS capable EO/IR system capable of detecting low contrast targets.