

# NAVY Transition Assistance Program

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## NEED & CUSTOMER REQUIREMENT

**Need:** The Navy seeks a method to autonomously launch, recover, and service small groups of UUVs on ISR or MCM missions during elevated sea states. The UUVs are to be hosted on an unmanned small surface craft that is in turn hosted on a surface combatant such as the LCS.

**Value to the Warfighter:** Our technology will allow USVs to support UUV missions under a much greater range of conditions than possible at present. This increases the utility of the USV platform, enhances LCS mission capabilities, reduces LCS crew debt, and keeps the warfighter out of harm's way.

**Operational Gap:** UUV recovery is currently very labor-intensive, exposes crew to war hazards, and is especially difficult in rough seas. Conducting UUV operations autonomously from an unmanned platform is thus highly attractive, yet no technologies exist to do so, except under optimal and artificial conditions.

**Customer Specifications:** The Navy desires autonomous and reliable launch, recovery, and servicing of up to six UUVs of different sizes from its Mine Warfare USV (USV-MIW) in elevated sea states. The desired capability includes autonomous connection of the UUV to the recovery system.

**Technology Description:** The system module under development launches and recovers UUVs off the stern of a minimally modified Navy USV, and transports them to and from the mission bay of the USV for servicing and turnaround. The system's mechanical, sensing and control features give it the ability to handle a wide range of UUV movement relative to the USV as the UUV is brought close to the USV and taken aboard. The system encompasses technology enabling the UUV to home and attach itself autonomously to a cable beneath the wave zone. This capability is also being developed under this program.

## TECHNOLOGY DEVELOPMENT MILESTONES (SBIR/STTR)

Milestone	TRL	Risk	Measure of Success	TRL Date
Homing and Recovery of single UUV to USV	4	Moderate	In-water demo of autonomous operation of key functions	June 2010
UUV Servicing and Storage of Multiple UUVs	4	Low	Demo of automated handling and UUV service port access	December 2010
L&R of Multiple Size UUVs	5	Moderate	In-water demo	June 2011
L&R in Elevated Sea States	6	High	End-to-End At-Sea Demos	June 2012

**Open contract:** N00014-09-C-0145 ending December 6, 2009

## N07-T037 - Advanced Technology & Research Corp.

### Automated Launch and Recovery of Small, Untethered Unmanned Underwater Vehicles from Unmanned Surface Vehicles

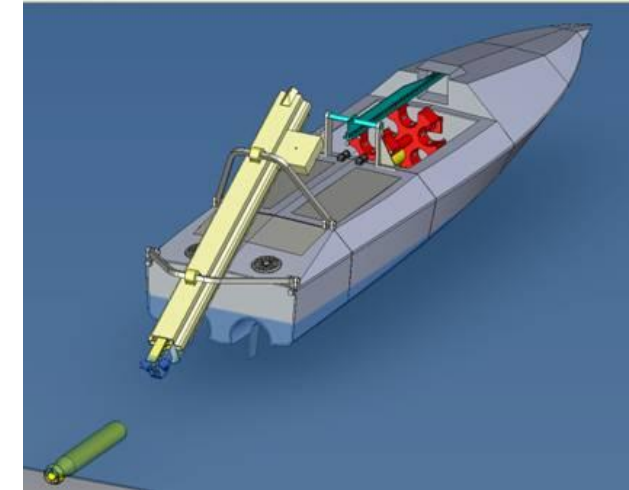
#### SPONSORSHIP of original SBIR/STTR Topic

**SYSCOM:** ONR - STTR

**Transition Target:** Mine Warfare USV (USV-MIW) module of LCS

**Original Sponsoring Program:** PMS420 - Littoral Combat Ship Mission Modules

**TPOC Phone Number:** (703) 696-2597



#### TECHNOLOGY TRANSITION OPPORTUNITIES (PHASE III)

##### Other Potential Applications:

In addition to the targeted USV-MIW, used as an LCS Mission Module sub-platform, the system could be fitted to other Navy USVs. The autonomous system could also be a force multiplier when fitted to small manned vessels currently employed to support Navy and Coast Guard UUV ISR and MIW missions. The technology could also be used in the offshore oil and oceanographic fields.

##### Business Model:

The company intends to manufacture and sell its UUV launch, recovery and servicing system to Government customers or its prime contractors supplying USVs, UUVs or mission module integration services. The UUV cable-homing technology is the property of the Research Institution partner and may be licensed or sold by the RI independently.

##### Objective:

We seek support to complete development, fabrication and testing of the turnaround services aspects of the system, conduct open water trials, and adapt the test vehicle system to the Navy USV-MIW or other small watercraft of interest to the military or industry.