

WHO

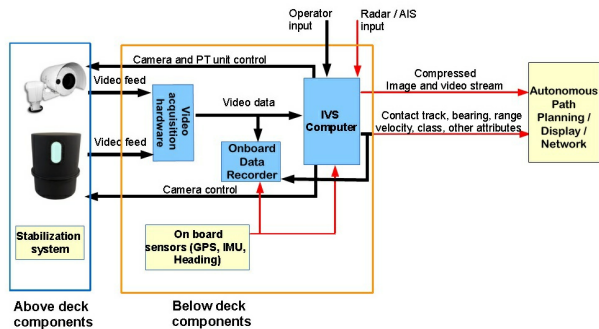
SYSCOM: NAVSEA

Sponsoring Program: Navy Surface Warfare Center Caderock (NSWCCD) Combatant Craft Division, Little Creek, Little Creek/PEO - Littoral Combat Ships (LCS)

Transition Target: Unmanned Influence Sweep System for Unmanned Surface Vehicle (USV) (UISS)

TPOC:
(757)462-3291

Other transition opportunities:
PEO-LCS Remote Multi-Mission Vehicle (RMMV)



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WHAT

Operational Need and Improvement: The USV at the heart of the Unmanned Influence Sweep System (UISS) is required to follow Navigation Rule 5: "Every vessel shall at all times maintain a proper look-out by sight and hearing as well as by all available means appropriate in the prevailing circumstances and conditions so as to make a full appraisal of the situation and of the risk of collision." The focus of this topic is to develop an innovative optical sensor and processor subsystem for the total perception processing system. The optical subsystem will provide a continuous 360 degree field of view, process the raw data and provide the contact attributes as an output to an operator or an onboard autonomous control system sufficient to support obstacle/collision avoidance.

Specifications Required: Topside sensor: size <= 4sq/ft, weight<=30lb.; Below-deck: size <= 2 sq/ft, weight<=10lb.; Power: 24Vdc vehicle power IAW MIL-STD-1275, at 30 amps maximum.

Technology Developed: Consisting of a 360° rotating, mid-wave IR camera, a pan-tilt-zoom camera, processor and advanced software technologies, UtopiaCompression's (UC) IVS system will provide unparalleled vision-based Situational Awareness (SA) to USVs and their operators. Using panoramic imagery, IVS system automatically detects and tracks surface contacts on the water. It then slews and cues the PTZ camera to extract critical attributes about the surface contacts. These capabilities will satisfy Navigation Rule 5 and support collision avoidance and autonomous navigation.

Warfighter Value: UC's IVS system will provide the Navy Warfighters with substantially improved 360° real-time visual situational awareness, capable of satisfying the Navigation Rule 5, enabling autoumous and semi-autonomous operation. In manned and semi-autonomous operations, UC's IVS system will enable automated processing to reduce the workload of operators; substantially improve accuracy via reduced human error and fatigue; will enable operators to operate multiple vehicles simultaneously, and will reduce labor costs.

WHEN

Contract Number: N00024-14-C-4047

Milestone	Risk Level	Measure of Success	Ending TRL	Date
System Requirement Specification	N/A	SRS approved	2	September 2012
IVS Feasibility Study	High	Proof-of-Concept Validated	3	August 2013
IVS System Prototype	Med	Prototype performance verified	5	December 2015
IVS System Productization	Med	SWaP constraints met	7	

HOW

Projected Business Model: UC will license the IVS System to UISS Prime Contractor, Textron Systems, and Prime Contractor vendors and Integrators of RMMVs. UC will license the IVS software to Government and Prime customers for integration into USV platforms and maritime systems with existent camera systems. The IVS software will also be licensed to commercial camera system vendors for inclusion in maritime navigation systems. UC will provide custom application services to conform the IVS software with specific customer classification requirements.

Company Objectives: UC will further develop the IVS software to function within a variety of camera configurations, in conjunction with additional sensor types, and in different environments. This will position the IVS technologies to operate in a broad range of vessels with varying Size, Weight And Power (SWaP) constraints, creating a much broader customer base. The addition of new functional environments will also increase the potential custom modification services offered by UC. UC has already initiated integration of the IVS software into an embedded implementation on a new processor under development by a major camera vendor.

Potential Commercial Applications: UC's IVS technologies offer significantly superior detection, tracking and unparalleled classification capabilities to customers in maritime environments, substantially improving situational awareness to manned, semi-autonomous, and autonomous systems. The IVS system has immediate application to the UISS platform, the RMMV platform, and there is substantial commercial potential for the IVS software technologies in maritime navigation systems and mobile camera applications.