

Department of the Navy SBIR/STTR Transition Program

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NAVAIR 2019-948

Topic # N171-009

Rugged Touchscreen Button with Positive Indication Feedback  
VR Rehab, Inc. (VRR)

WHO

**SYSCOM:** NAVAIR

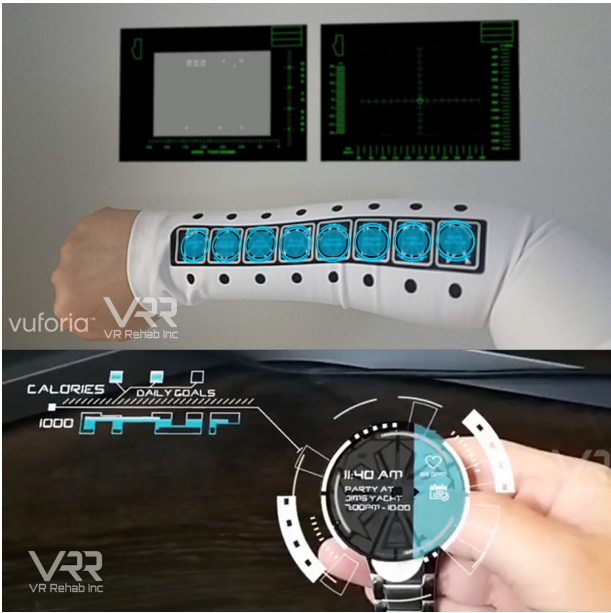
**Sponsoring Program:** PMA-251

**Transition Target:** LSO Displays and Controls Plus Option to Replace Other Navy Controls and Displays with Augmented Reality

**TPOC:**  
(732)323-7310

**Other transition opportunities:**  
VRR's Wearable Augmented Reality Controls with Haptic Feedback (WARC-H) has already been licensed to augment or replace smartwatches. Agreement also includes any evolutions they pay for to be used to the military advantages as well at no cost.

**Notes:** WARC-H Screen capture demonstrating Landing Signal Officers (LSO) Controls and Displays. No Hardware on the arm. Civilian Smartwatch Version. A New Smartwatch only Requires a Download from the App Store.  
Any User Desired Configs!



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WHAT

**Operational Need and Improvement:** Current Navy desires lighter, less costly, and ruggedized. WARC-H is weightless, free-software, and impossible to damage (shooting through a ghost). VRR's goal is to "Replace Metal with Augmented Reality Everywhere Practical"; WARC-H is the solution. Replace metal controls and displays with augmented reality controls and displays that move with you no matter where you are. Specific focus is replacing the expensive legacy buttons on the current Landing Systems Officers Display Systems (LSODS) on Aircraft Carriers.

**Specifications Required:** Initial transitions are to LSO's on Aircraft carriers with all the required Navy standards. Other Navy applications standards and requirements are also planned. Civilian applications for new smartwatches are as easy as an App Store Download. New Navy/USMC Controls & Displays are Downloads. Next-generation AR interface where hardware is yearly updates to hardware is not needed. The enemy cannot destroy controls or displays.

**Technology Developed:** Next-generation AR interface, 'Iron Man' type Holographic Augmented Semi-Transparent Controls and Displays attached to your body WITHOUT wearing ANY hardware. WARC-H Augments and/or Replaces Existing Hardware Displays and Controls with Augmented Reality Controls and Displays that appear attached/worn by Users; Users touching limbs add intuitive Haptic Feedback. Big Easy to Read, Easy to Use Controls and Displays, Weightless, and No H/W! WARC-H empowers users customization to their preferred layouts (big easy to read/use). Unity3D based approach ensures cross-platform support for Windows, Android, and iOS.

**Warfighter Value:** Our innovative Wearable Augmented Reality Controls with Haptic (WARC-H) feedback was originally developed for ruggedized use by warfighters within combat environments. Orders of magnitude savings across Navy programs and platforms; as well as joint savings. No initial costs for software and evolutionary upgrades via simple downloads (can't beat free). Civilian funding agreements already includes any evolutions they pay for to be used to the military advantages as well at no cost. Benefits to Navy & Joint PORs include: Augmenting or Replacing LSO Display Hardware, Augmenting or Replacing Smartwatches (Leave the phone in pocket mode), and Controlling ANY Systems Faster/Better.

WHEN

Contract Number: N68335-19-C-0155

Milestone	Risk Level	Measure of Success	Ending TRL	Date
LSODS WARC-H Function Prototypes	N/A	Completed	5	November 2018
Smartwatch Funtional Prototypes	Low	Completed	5	June 2019
Operational Tests with HoloLens 2	Low	Tests within Navy LSO Simulations	6	December 2019
Commercial Smartwatch Beta Replacements	Low	Commercial Sales	8	August 2020
Operational Deliverables to NAVAIR	Low	Navy Acceptance	8	February 2021
Integrated Augmented Reality System POR Transition	Low	IVAS Transition	8	February 2021

HOW

**Projected Business Model:** VRR hybrid business model is to provide our software for FREE by use of the military and for-profit is through our civilian sales. The WARC-H project plan transitions include use within the new Hololens 2 and within the Army half-billion-dollar IVAS (Initiative vision Augmented System) programs.

**Company Objectives:** VR Rehab Inc. is a woman-owned small business (WOSB) with over 25+ years of researching and developing technologies to help improve our military's effectiveness and safety. Developing augmented reality interfaces to provide advantages for our warfighter with enhanced situational awareness and faster/better decision-making support. Winner of 2018 I/ITSEC Best Paper in Emerging Concepts & Innovative Technology. VRR objectives include intuitive augmented reality visualizations and controls that augment or place existing hardware-based systems.

VRR envisions becoming the defacto standard for the coming wave of augmented reality devices. First focused on the Hololens 2 for civilian uses and IVAS for military uses; secondarily supports the full range of augmented reality systems inclusive of smartphone-based AR HMDs.

**Potential Commercial Applications:** VC Firm has already Licensed WARC-H Tech enables next-generation AR Smartwatches. WARC-H is able to augment or place smartwatches.