The U.S. Navy Collaborates with Colleges and Universities to Transition Cutting-Edge Capabilities to the Fleet

New "Investment Horizons" Framework Accelerates Technology Transitions from Academia to Defense

ARLINGTON, Va., August 27, 2024 – As the world grapples with increasing geopolitical tensions and the race for technological dominance intensifies, the Office of Naval Research (ONR), led by Corey Love, PhD, is partnering with Stanford University's **Technology Transfer for Defense (TT4D)** program, led by Jeff Decker, PhD, to take decisive action to ensure the U.S. military remains at the forefront of innovation. The partnership between the two institutions is accelerating the transfer of technologies from dozens of academic labs around the country to military application. The "**Investment Horizons**" framework, recently developed under the guidance of Acting Chief Technology Officer Justin Fanelli, is a groundbreaking initiative designed to streamline and fastrack the transition of emerging technologies from academic research to military application.

The new framework used by the ONR-Stanford partnership, is redefining how the U.S. Navy identifies, develops, and integrates innovative solutions, ensuring technological superiority in an increasingly competitive global landscape. Transitioning these cutting-edge technologies addresses national security threats in an era defined by rapid change and strategic competition. The results are already tangible. Technologies developed in university labs are being scaled and

deployed across the military, enhancing the operational readiness of U.S. forces and strengthening the defense industrial base. “Investment Horizons” categorizes technologies into four strategic stages:

- Horizon 3 (Evaluating): Technologies that offer new capabilities, such as advanced energy storage solutions, are identified and assessed for potential military application. For instance, Nickel-Zinc battery research by Prof. Chris Rhodes and Dr. Debra Rolison at Texas State University, is currently under evaluation for use in Undersea Underwater Vehicles, with funding from ONR. The NiZn technology has already been fully vetted and is commercially scalable and now its military use is under evaluation.

- Horizon 2 (Emerging): Promising technologies undergo pilot programs to evaluate their scalability and integration into military operations. An example of Horizon 2 under the ONR NEPTUNE program, is the work of Prof. Steve Leeb at MIT who is testing new methods of energy management and monitoring on shipboard systems. These methods utilize AI-assisted electrical load-balancing technologies, which already exist, but these technologies must be assessed for their potential to be integrated and scaled across the U.S. Navy’s fleet in such a way that maintains the operational effectiveness of U.S. naval vessels.

- Horizon 1 (Investing/Extracting): Proven technologies are scaled for widespread deployment across the Navy, ensuring sustained operational effectiveness. Many university labs across the country conduct pilot tests of basic science applications which may or may not yield meaningful solutions to current and anticipated Navy

challenges. The U.S. Navy invests in new potential technologies at institutions around the country to ensure the future of the US industrial base.

- Horizon 0 (Retiring): Outdated technologies are phased out, allowing resources to be reallocated to more promising innovations aligned with the Navy's strategic goals.

"The urgency of what is currently going on in our world in terms of conflict, demands that we accelerate the transition of game-changing technologies into the military, ensuring our forces are equipped with the most advanced tools available," said Justin Fanelli, acting chief technology officer with the United States Department of the Navy. "Through collaboration with institutions like Stanford University, we're now able to move from research to deployment faster than ever, which is essential given today's global challenges."

ONR's NEPTUNE program and Stanford's Technology Transition for Defense program play a pivotal role in this effort. Dr. Decker emphasizes the strategic importance of aligning academic research with military needs.

"The collaboration between Stanford University and the U.S. Navy is a powerful example of how academia can drive significant advancements in defense technology," said Dr. Decker, managing director of the Technology Transfer for Defense program at Stanford University and with the Precourt Institute for Energy and a Social Science research scholar at Stanford. "The Investment Horizons framework is not just about adopting new technologies – it's about ensuring that these innovations are strategically aligned with the long-term needs of the military at a time when global competition is at its fiercest."

With ongoing global conflicts in Africa, Middle East, Europe,

and the Indo-Pacific, the need for rapid and effective technology transitions has never been more critical. The Investment Horizons framework, supported by the innovative efforts of ONR programs like NEPTUNE and NURP and academic partnerships, is positioning the U.S. Navy military to maintain its edge in this new era of Great Power Competition.

To learn more about the ONR Investment Horizons framework, visit onr.navy.mil; for more information on the Technology Transfer for Defense program at Stanford University, visit techtransferfordefense.stanford.edu.