**Immediate Impact:** LCDR West's award-winning research delivered HELWS laser weapon tactical decision aids.

**Future Advantage:** Student-led “Big Idea Exchange” delivered Navy and Marine Corps operational solutions.

**Enduring Leadership:** NWSI IW Chair curricula review with NAVWAR strengthened alignment to Project OVERMATCH.

**Objective: Readiness (R5)**

LT Bridger Smith thesis designed an AI-based DevSecOps tool to support maintenance planning and execution for SSBNs.

- Working w/Project Blue and industry.
- 3D model and “Digital Twin” viewer provides a common interface to address inefficiencies that lead to delays.

**IMPACT:** Improved strategic deterrence. Provides shipyards, Trident Refit Facilities, and submarines with a shared, modern, open-sourced, DoD created, DISA approved maintenance planning and execution tool.

**BIG IDEA EXCHANGE (BIX):** LT Bridger Smith (above) and five other NPS students showcased innovative research involving AI/ML, autonomous systems and more to advance Fleet and Joint force capabilities. Panel members included Adm. Thomas Fargo (Retired), Gen. Robert Brown (Retired), Lt. Gen Thomas Bussiere (USSTRATCOM).

**SPOTLIGHT: Navy League of the United States:** Rear Admiral William S. Parsons Award for Scientific and Technical Progress

WHAT: Presented since 1957, this award is given to a DoN officer, enlisted or civilian who has made an outstanding contribution in any field of science that has furthered the development and progress of DoN.

WHO: LCDR Austin West was selected for his thesis research on quantifying the effectiveness of adaptive optics in compensating for turbulence on the High Energy Laser Weapon System (HELWS). His research directly supported HELWS experts at NIWC Pacific and model developers at AFIT. LCDR West also supported the Navy’s Solid-State Laser Technology Maturation (SSL-TM) exercise in November 2020 during the HELWS at-sea testing.

**IMPACTS:** Delivered practical operational Tactical Decision Aids for HELWS operations and fire control guidance. Propagation model supports ongoing efforts at the Naval Research Laboratory in Monterey to improve electro-optical propagation impacts within the Navy’s Coupled Ocean Atmosphere Mesoscale Prediction System that provides forecasts of variables directly associated with HELWS operations.

**Priority: Education & Training**

Capt. Michael Gannon USMC is using commercial-off-the-shelf technology to replicate high-end training systems. $300 in 3D printing, a Raspberry Pi and open-source software replace current $20k designs.

**IMPACT:** Increases effectiveness at greatly reduced costs.

- Deployable, scalable and adaptable.
- Computer-aided instruction integrated with training simulators for much less.
- Provides real-time data collection and feedback on student performance.
MISSION IMPACTS:

DEFENSE EDUCATION

- **OVERMATCH**: RDML Eric Ruttenberg, NAVWAR Vice Chief Engineer, conducted an Electrical Engineering (590) program review and discussed OVERMATCH faculty and student research thesis and Capstone needs with faculty and NWSI Warfare Chairs. The IW Chair, CAPT Robert Hight, and other visited NAVWAR HQ for additional to discussions. IMPACT: The 590 curricula and research will develop solutions for OVERMATCH and graduates educated to employ them.

- **Wargaming**: Prof. Robert Burks led a Wargaming Capstone course for the Surface and Mine Warfare Development Center’s Warfare Tactics Instructor (WTI) course in San Diego. IMPACT: The course included 30 Surface Warfare Officers completing their WTI training. The COAs developed and wargamed by the students focused on Great Power Competition in a South China Sea scenario.

- **USMC**: 2D Light Armored Reconnaissance (LAR) Battalion at Camp LeJeune, North Carolina hosted Capt. Max Schlessel, a Computer Science -MOVES Track student, conducted workload capability training using an interactive simulation environment (ISE). IMPACT: Marines across the MAGTF conduct collaborative training against realistic adversaries in realistic operating environments honing warfighting skills through multiple “reps and sets” using simulators and VR.

- **Microgrids**: Using ingenuity and determination, faculty and students constructed a microgrid lab housed in a 20’ shipping container for easy transport and field experimentation. IMPACT: Provides a valuable tool for students studying power electronics to test/integrate new components in defense applications.

- **MOU**: Lt. Gen Thomas Bussiere (USSTRATCOM D/CCDR) entered an MOU with NPS to provide graduate certificates, Master’s, PhD and continuing education to its personnel and all component commanders. IMPACT: Advance studies and research related to strategic deterrence and associated topics will enhance USSTRATCOM mission effectiveness.

APPLIED RESEARCH

- **Xerox**: NPS-Xerox team presented a plan to CNSP to support installation of the ElemX 3D liquid metal printer aboard USSTRIPOLI (LHA-7) during the ship’s upcoming PSA 01SEP-23NOV in San Diego. IMPACT: The ElemX is capable of printing parts at higher rates, more precisely and eliminates concerns associated with metal powders. The NPS-Xerox partnership accelerates shipboard testing, while student-faculty research will support use-case studies in collaboration with NAVSEA.

- **SPY-6**: Classified research on the SPY-6 radar discrimination capability by LT Jonathan Shepherd (SWO and Meyer Scholar) is being done in collaboration with the Missile Defense Agency, the Johns Hopkins Applied Physics Laboratory, and the Massachusetts Institute of Technology Lincoln Laboratory. IMPACT: Will enhance SPY-6 radar discrimination as an indispensible factor in the integrated air and missile defense of Naval forces.

- **NAWCAD**: The Ocean Harvest (OH) Synthetic Aperture Radar (SAR) Image Formation Processing (IFP) Laboratory will partner with Dr. David Garren, Electrical & Computer Engineering at NPS, to support development of Moving Target Focus (MOTAR) capability, who is a recognized as a leader in this field. IMPACT: MOTAR uses SAR to provide critical target classification (friend or foe, and lethality) information pertaining to mobile targets.

- **CNSP**: VADM Kitchener requested three student thesis briefs. IMPACT: Relevant research applied to Fleet needs.
  - Systems Engineering and Analysis: “Analyze mission resilience in a major conflict by extending the “kill chain” from “metal bending to metal delivery”
  - Financial Management: “Surface Warfare Officer School 360-Degree Tailored Feedback Program: Evaluation of Division Officer Assessments"
  - Operations Research: “Anti-Surface Warfare Battery Survivability in Expeditionary Advanced Basing Operations”

- **JIFX 21-2**: JIFX featured more field activities at the Aquatic Environment Laboratory across the street from the main campus SLAMR and at Camp Roberts airfield. The Monterey Herald covered the student-industry experimentations.
SUPPORTING UPDATES:

ENABLING ENGAGEMENTS

- **CVN-71**: Theodore Roosevelt Carrier Strike Group N6, CDR Joseph Houser, a Space Systems graduate worked with faculty Dr. Gary Thomason to model terrestrial and space-based communication and ISR system geometries for future deployments and exercises. **IMPACT**: Aid provided was well received and highlighted the need for space support dedicated to maritime operations and the Fleet demand NPS fills for ongoing support often enabled by NPS alumni.

- **NSWC**: Dr. Simon Veronneau, Operations and Logistics at NPS, received a letter of commendation for his research/analysis of Air Independent Propulsion Diesel-Electric Submarines. **IMPACT**: Understudied alternatives provided can improve SEAL undersea operations while decreasing costs to the Navy.

NEWS & ALUMNI (More News)

- “Dr. Scott S. Gartner Takes the Helm as NPS’ 16th Provost & Academic Dean”
- “NPS Professor, Students Explore Innovative Ways to Power the Navy”
- “NPS, NASA Team Up on “Astrobatics” Project to Advance Spacecraft Robotics”
- “NPS Student Invents, Patents Durable Uniform Nametags”
- “Advancing Quantum Technology for Navy Applications”

IMPACTFUL EVENTS (More Events)

- **HELD**:  
  - 7-8 April: Visit by CIO Aaron Wies and Chris Cleary, Principal Cyber Advisor  
  - 28 April: Visit by Vice Chief of Naval Operations Adm. Bill Lescher  
  - 29 April: Visit by VADM Philip Sawyer, DCNO (N3/N5), FAO Flag Sponsor  
  - 29 April: STEM event -- “Ask an Astronaut” for Military Children  
  - SECNAV Guest Lectures:  
    - 13 April: Missile Defense Agency (MDA) Director Vice Adm. Jon A. Hill spoke on “Missile Defense and Technology Warriors”  
    - 27 April: Mr. Joseph Bryan, DoD Senior Advisor on Climate spoke on “The Security Implications of Climate Change”  
    - 25 May: Chief of Naval Research Rear Adm. Lorin C. Selby spoke on “Re-Imagining the Future Force”  
  - 11-13 May: 18th Annual Acquisition Research Symposium, Explores Synergy, Technology in Acquisition Strategies  
  - 1 June: NWSI’s Emerging Tech Series: Intelligent Autonomous Systems

- **UPCOMING**:  
  - 18 June: Graduation, VADM Jeff Hughes will be the commencement speaker (first in-person since Dec 2019): 362 graduates (total degrees earned: 375)  
  - 22-24 June: DoD Symposium on Information Strategy and Political Warfare (SISPoW) in 21st-century GPC. Register [here](#).  
  - 22-24 June: NIWDC’s INFOWARCOM 2021 (NPS IW student thesis briefs)  
  - 25 Aug: USSOUTHCOM, ADM Craig Faller visit, and SECNAV Guest Lecture