MESSAGE FROM LEADERSHIP

This year marks the first execution year of the NAVSEA Campaign Plan to Expand the Advantage 2017 – 2020. This document provides a broad overview of your amazing efforts in Expanding the Advantage in 2017. Every day we are amazed at the breadth, depth, and dedication of the NAVSEA team—truly the Force Behind the Fleet! Each and every one of you are integral to continued successful accomplishment of our mission to design, build, deliver, and maintain ships and systems on-time and on-cost for the U.S. Navy.

Our Campaign Plan was designed to leverage NAVSEA’s vast incredible capabilities and resources. We are extremely proud of the progress achieved in the core objectives of our Mission Priorities—On-Time Delivery of Ships and Submarines, Culture of Affordability, and Cybersecurity. That progress and ultimate success in meeting our Campaign Plan goals could only be achieved with your trust and commitment. Your engagement, collaboration, and ingenuity not only led to mission priority success, but also allowed us to make great strides in meeting the objectives of our foundational lines of effort—Design for Talented People and Design for a High Velocity Learning Environment.

While we made great progress in every area of the Campaign Plan this year, much work remains. The Campaign Plan is an active effort that continues to rely on each and every one of you to ensure we build on our successes in 2018. As the Force Behind the Fleet, you are the key to the People and High Velocity Learning lines of effort—both critical drivers for overall mission success. Our top priority remains on-time delivery of ships and submarines from new construction and in and out of maintenance availabilities. We must also continue our focus on affordability, doing more with the resources we have and ensuring we make every dollar count, and cybersecurity, ensuring we integrate cybersecurity into every facet of our business to protect, detect, react, and restore our systems from cyber attacks.

As you review the many 2017 accomplishments presented in this document, take pride in your contributions to our mission, vision, and support to the warfighter and the greatest Navy in the world.

As always, thank you for what you do each and every day in support of this great Navy and great Nation. Keep Charging, Share What You Know, and Win Them All!
The NAVSEA Campaign Plan to Expand the Advantage set sail in 2017. It is highlighted by our Strategic Framework which flows directly from the Navy’s Design for Maintaining Maritime Superiority and its four Lines of Effort outlining the strategic vision for the Navy. Our Campaign Plan is focused on three Mission Priorities and two foundational Lines of Effort which address today’s challenges and provide the overarching objective and vision to expand the U.S. Navy’s maritime advantage over our adversaries through our people, products, and services.
2017 ACCOMPLISHMENTS

NAVSEA by the NUMBERS

1 = Campaign Plan Published

4 = Naval Shipyards Achieving Federal Lab Status

10 = Ships Delivered

48 = CNO Availabilities Completed

93 = Dry dock Avoidances Utilizing Navy Divers

124 = Patents Filed

450 = Hull Cleaning Operations Performed by Navy Divers

540 = Continuous Maintenance Availabilities Completed

872 = Manned Dives by Navy Experimental Diving Unit (NEDU)

912 = Navy Afloat Maintenance Training Strategy Program Graduates

1,524 = Active Foreign Military Sales Cases

2,655 = Departures from Specification

17,000 = Active iNFUSION Accounts Across the Enterprise

22,000+ = Technical Assists

53,485 = Contract Actions

75,507 = Civilian & Military Members of the Enterprise Workforce

168,033 = Technical Decisions

47,300,000,000 = $$ Flowing Through the NAVSEA Enterprise
Acclaimed as “America’s Shipyard” for being the nation’s first, oldest, and continuously operating shipyard, Norfolk Naval Shipyard (NNSY) commemorated its 250th year on Nov. 1, 2017. NNSY stands and continues in its institution of shipbuilding, repair, and maintenance. It is a beacon of patriotism, strength, and determination with a tradition of rich history which all Americans can trust and respect.

NNSY’s anniversary logo reads, “An important past, a vital future.” Over 250 years the shipyard’s important past included a fundamental hand in winning eleven major wars. NNSY also rallied around the nation’s efforts in ending piracy, in the circumnavigation of the Great White Fleet, in scientific exploration of the Pacific, and in introducing Japan to American trade. A few “firsts” that NNSY has seen include the nation’s first dry dock, still in service; the construction of USS Texas, the nation’s first battleship; and the conversion of USS Langley, the nation’s first aircraft carrier.

In expanding the advantage of our Navy, by accomplishing delivery of ships and systems on time, NNSY’s vital future will continue on as the stomping ground for discovery and innovation.

Sarkis Tatigian: Celebrating 75 Years of Federal Service in the Navy! Longest serving civil servant ever! 26 Sept 2017
2017 was a tremendous year for our top Mission Priority with great effort from our Naval Shipyards, Supervisors of Shipbuilding, Regional Maintenance Centers, Diving and Salvage, and our industry partners in new ship construction and repair. We completed 48 CNO availabilities and 540 Continuous Maintenance Availabilities. On average NAVSEA touched every active ship in the Navy two times. We delivered 10 new construction ships as well as 185 boats and craft, boosting the size of the Navy Battle Force to 280 ships.

**USS GERALD R. FORD (CVN 78)**

USS GERALD R. FORD (CVN 78) delivered on May 31 and was commissioned on July 22; just 6 days after commissioning, she recovered and launched four fixed wing jet aircraft (F/A-18E/F), introducing new technologies and capabilities to the Fleet.

- Length: 1,092 feet
- Beam: 134 feet, Flight Deck Width: 356 feet
- Displacement: 100,000 long tons full load
- Speed: 30+ knots (34.5 miles per hour)
- Propulsion: 2 nuclear reactors, 4 shafts
- Crew: 4,539 (ship, air wing & staff)
- Aircraft: 75+

**On-Time Delivery of Ships and Submarines**
2 Amazing Weeks in July 2017 . . .

USS JOHN FINN (DDG 113)
Commissioning - 15 July 2017

USS GERALD R. FORD (CVN 78)
Commissioning - 22 July 2017

USS CONSTITUTION
Undocked - 23 July 2017

USS RAFAEL PERALTA (DDG 115)
Commissioning - 29 July 2017

USS PORTLAND (LPD 27)
USS COLORADO (SSN 788)
USS GERALD R. FORD (CVN 78)
USS CITY OF BISMARCK (T-EPF 9)
USS RAFAEL PERALTA (DDG 115)
USS Ralph Johnson (DDG 114)
USNS City of Bismarck (T-EPF 9)

new construction deliveries
ON-TIME DELIVERY OF SHIPS AND SUBMARINES

Just 3 weeks after USS ROSS’s on-time delivery from CNO availability (SRA) in Rota, Spain...

...shown is one of 59 Tomahawk Land Attack Missiles (TLAMs) she launched from the eastern Mediterranean Sea into Syria.

CNO availabilities completed in 2017 including 5 SSNs, 4 CVNs, 1 SSBN, 19 DDGs, 4 LSDs, 4 PCs, 3 LHDs, 3 CGs, 2 LPDs, and 3 MCMs. We also completed 540 Continuous Maintenance Availabilities (CMAVs).

USS PROVIDENCE (SSN 719)
Delivered 23 days EARLY from her PIRA maintenance availability at Portsmouth Naval Shipyard

USS RHODE ISLAND (SSBN 740)
Undocked in 217 days, 3 days EARLY...
...the fastest ever at Norfolk Naval Shipyard
ON-TIME DELIVERY OF SHIPS AND SUBMARINES

2017 Naval Shipyard CVN Maintenance

3 CVN Maintenance Availabilities Completed
All 3 Delivered Back to the Fleet Ahead of Schedule

USS RONALD REAGAN (CVN 76)
PIA Completed – 8 May 2017
1 Day Early

USS HARRY S. TRUMAN (CVN 75)
PIA Completed – 21 July 2017
2 Days Early

USS JOHN C. STENNIS (CVN 74)
PIA Completed – 12 August 2017
5 Days Early

USS GEORGE H. W. BUSH
(CVN 77)
Astern Throttle Valve Team
Norfolk Naval Shipyard sent a fly-away assist team to meet the BUSH underway and perform a critical steam valve replacement with no interruption to her deployment.
ON-TIME DELIVERY OF SHIPS AND SUBMARINES

Notable 2017 Accomplishments

- Held a Maintenance Planning Summit, identifying 28 actions to minimize execution risk and establish stable requirements and predictive planning.
- Held a Maintenance Execution Summit, identifying 261 actions aimed at improving throughput and removing obstacles preventing on-time delivery.
- Conducted material assessments related to SSN’s operation intervals, cycles, and service life to return 2,159 days of SSN operational availability to support fleet requirements and Naval Shipyard workload leveling.
- Norfolk Naval Shipyard completed an underway steam valve replacement aboard USS GEORGE H. W. BUSH (CVN 77), maintaining her commitment to the COCOM.
- Forward Deployed Regional Maintenance Center (FDRMC) Detachment Rota, Spain completed USS ROSS’s SRA (DDG 71) on-time and 20 days later she fired 59 Tomahawk Land-Attack Missiles into Syria.
- All four Naval Shipyards achieved Federal Laboratory Status from Office of Naval Research.
- The Naval Ship Engineering Center (NERC) Port Hueneme Division and USS CORONADO (LCS 4) conducted a successful live-fire of the Harpoon Block 1C missile during Exercise Pacific Griffin on 22 August; this event was the first for an LCS to successfully use Fire Scout to help target for an over-the-horizon missile firing.
- Our Navy Experimental Diving Unit (NEDU) conducted 872 manned dives this year including an 11 day, 500 foot saturation dive, the deepest Navy dive since 2007; this dive allowed NEDU personnel to conduct around-the-clock training and qualify on six separate watch stations.
- Our Warfare Centers executed 3,706 Fleet “touches” in direct support of our war fighters.
- Our Safety Team hosted a Safety Summit focused on partnering with representatives from each of the major product lines (Shipyards, RMCs, Warfare Centers and SUPSHIPs) to engage in dialogue and share best practices to reduce accidents.
- Southwest RMC (SWRMC) completed four dockings in a two week period: on May 4, undocked USS FREEDOM (LCS 1) from the San Diego Naval Station graving dock in support of emergency Main Engine repairs; on May 9, successfully undocked USS PAUL HAMILTON (DDG 60) from the “Pride of San Diego” at BAE; on May 16, docked USS FORT WORTH (LCS 3) in the San Diego Naval Station graving dock in support of her SRA; and on May 17, docked USS MONTGOMERY (LCS 8) in BAE’s “Pride of San Diego”, in support of her PSA.
- USS RAMAGE (DDG 61) completed her 389-day Extended Selected Restricted Availability ON TIME December 15! RAMAGE is our first Coast-Wide bid contract moved out of homeport; great job to the SEA 21 and CNRMC team working together with industry partners to complete the required maintenance and modernization work on schedule and prove that Coast-wide bids work.

USS THE SULLIVANS (DDG 68)
SRA Completed 4 days EARLY
(Southeast RMC)

USS OAK HILL (LSD 51)
PMA Completed On-Time
(Mid-Atlantic RMC)

USS STOCKDALE (DDG 106)
Docking SRA Completed On-Time
(Southwest RMC)

USS RAMAGE (DDG 61)
Extended SRA Completed On-Time
(Mid-Atlantic RMC)
ON-TIME DELIVERY OF SHIPS AND SUBMARINES

NAVSEA Supervisor of Salvage & Diving

2017 Prominent Accomplishments

- Utilizing Navy divers, avoided 93 dry dockings (65 submarines, 2 CVNs, and 26 surface ships) returning 465 operational days to the Fleet and saving $83 million.
- Navy divers performed 450 hull cleaning operations resulting in fuel savings of $155 million.
- Conducted 124 Underwater Ship Husbandry (UWSH) Operations (100 in-water and 14 dry dock operations), highlighted by:
  - USS LABOON (DDG 58) Rudder Weld Repair (Norfolk, VA)
  - USS MASON (DDG 87) Rudder Weld Repair (Norfolk, VA)
  - USS BULKELEY (DDG 84) CPP Seal Repair (Norfolk, VA)
  - USS WASP (LHD 1) Propeller Replacement (Norfolk, VA)
  - USS ROSS (DDG 71) Rudder Repair (Rota, Spain)
  - USS JOHN S. MCCAIN CPP Blade Removal (Singapore)
  - USS ANTIETAM (CG 54) Blade & Ropeguard Removal (Yokosuka, Japan)
  - USS BENFOLD (DDG 65) Sonar Dome Repair (Yokosuka, Japan)
  - USS RAMAGE (DDG 61) Hull Insert & Weld Repair (Pascagoula, MS)
  - USS CHUNG HOON (DDG 93) Starboard Hub Seal Repairs (Pearl Harbor, HI)
  - USS HIGGINS (DDG 76) Hull Insert (San Diego, CA)
  - USS SULLIVANS (DDG 68) Rudder Repair (Mayport, FL)
- Supported search and led salvage efforts to locate and recover the Argentine Navy diesel-electric submarine ARA SAN JUAN.
- USS FITZGERALD & USS JOHN S. MCCAIN collision response to survey damage, recover our fallen sailors, execute temporary repairs, and oversee heavy lift transport to the repair yards.
- Conducted wreck-in-place of ex-SHADWELL, the Naval Research Lab’s full scale firefighting test ship; conducted asbestos and PCB abatement and cutting structure for removal.
- Supported COMPACFLT, MDSU-1, and USNS SALVOR with recovery of an intact MV-22 that went down near the Great Barrier Reef Park, Australia.
- Employing the Towed Pinger Locator, SUPSALV supported MDSU 1 in search for an Army Blackhawk helicopter that went down offshore Oahu, HI.
- Led recovery of the C-2A Greyhound that crashed into the Philippine Sea.
Our focus on affordability spans the spectrum from the cost of our products to the cost of our processes to the cost of conducting our day-to-day business. We apply innovation in every facet of our business from the industrial processes in our shipyards to the research, science, and engineering in our warfare centers to the contracting strategies and negotiations with our industry partners. We continue to refine our acquisition and contract strategies to enhance competition and drive down cost through the use of multi-year procurements, block-buys, combined solicitation strategies, and special incentives related to facility improvements.

On 29-30 August 2017, the Culture of Affordability Workshop was held with 25 attendees from across the Enterprise. Thirteen Enterprise-wide Affordability Programs were presented and shared. The Culture of Affordability Community of Practice was established as an outcome of the Workshop.

The Future Carriers program office has identified cost reductions that can be attributed to component procurement savings and updated inflation assumptions with a net result of these savings equaling to a $325 million reduction in the total cost of CVN 80.

FDRMC Rota: Accommodation Ladder Testing Rig

- Safer
- More Accurate Test
- Less Time
- Lower Cost
CULTURE OF AFFORDABILITY

Notable 2017 Accomplishments

- Utilizing Navy divers, avoided 93 dry docking (65 submarines, 2 CVNs, and 26 surface ships) returning 465 operational
days to the Fleet and saving $83 million.
- Initiated 208 affordability initiatives across 185 technical warranted areas focusing on specifications, processes, and
one-time changes.
- Completed 17 Cumbersome Work Practice projects, collaborating across technical communities to reduce the cost
and schedule associated with depot-level maintenance.
- Awarded a contract modification for the detail, design and construction of LHA 8 which was competitively procured
using a combined solicitation strategy that supported procuring LHA 8 and T-AO(X) (ships 1-6) at the lowest price and
risk to the Government while also maintaining a stable amphibious and auxiliary shipbuilding industrial mobilization base
for current and future shipbuilding programs and critical Navy ship repair work.
- Awarded the CVN 73 RCOH contract in the most advantageous execution contract terms negotiated for any RCOH,
including ~$360 million cost avoidance to the Navy budget.
- Awarded contract modifications for DDG 125 and DDG 126, competitively awarded as part of the FY13-FY17 multiyear
procurement (MYP), providing significantly enhanced capability to the Fleet as the first Flight III ships constructed at
Huntington Ingalls Industries and Bath Iron Works, respectively; the DDG program also received DAB approval of the
forthcoming competitive solicitation for the FY18-22 Multi-Year Procurement for additional Flight III ships.
- Since Milestone B in January 2017, the COLUMBIA Class Submarine Program has implemented cost reduction initiatives
reducing the average unit procurement cost by ~$100 million, achieved through funding Advance Construction and
Missile Tube Continuous Production.
- Navy divers performed 450 hull cleaning operations resulting in fuel savings of $155 million.
- With critical SEA 01 assist, gained final approval for numerous End-of-Life-Buys resulting in savings of $3 million by elimi-
nating the need for costly redesign.
- Closed FY17 with an Operation & Maintenance, Navy (OMN) obligation rate of 99.7%, which equates to over $4.3 billion
in gross obligations; this is the highest obligation rate for the OMN appropriation since the ERP transition.
- The Navy Small Arms Program (PMS 340) significantly changed the way the Navy approaches Small Arms maintenance
in 2017 by no longer sending minor repairs to the ISEA (NSWC Crane), Utilizing the Authorized Parts List (APL) and the Au-
thorized Equipment List (AEL), along with Technical Manuals and Maintenance Requirement Cards (MRCs), basic Small
Arms is now accomplished at the waterfront. This resulted in a 70% reduction in the number of Small Arms returned to
NSWC Crane. PMS 340 is also driving to simplify and reduce the Navy Small inventory to nine basic weapons platforms,
increasing commonality across DoD, and reducing both acquisition and maintenance costs.
- Implemented the Sailor Test Team (STT) at SCSC Wallops Island to perform operationally relevant assessments and identi-
fy issues early in AEGIS baseline computer program and equipment development, resulting in potential cost avoidance
of $50 million across the FYDP. Issues identified are documented and provided to the OEM to resolve prior to certifica-
tion fielding. The STT conducted three formal assessments in 2017.

Across the Enterprise ...

NUWC Keyport personnel and Sailors assigned to Submarine Development Squadron Five / Unmanned Undersea Vehicles Squadron One monitor a submerged UUV’s performance at the NUWC Keyport Division pier in February. The UUV was tested with various payloads pier side, and then was returned to Barb Hall for necessary adjustment.

NORFOLK NAVAL SHIPYARD
Entering a more modern era with a new dual-head pipe bending machine, Code 960 is able to create more precise bends in a fraction of the time, with modern automated controls programmed into the new machine’s memory achieving a culture of affordability.

NSWC Indian Head EOD Tech Division engineers responded to an urgent U.S. Marine Corps need for CCU-127/A Fire Extinguisher Cartridges by inspecting over-aged assets and validating 13 each for restoration to operational status. The 13 assets were identified out of a pool of more than 1,500 over-aged units and will be utilized in preventing interrupted USMC CH-53 helicopter operations until the current production contract delivers spares replacements.
We continue efforts to integrate Cybersecurity into every facet of our business. As systems become more networked, the threat to those systems becomes more prevalent. We recognize developing secure systems starts with an effectively trained workforce. We have made significant strides in identifying cybersecurity roles and best practices and integrating them into the systems engineering process.

To kick off National Cybersecurity Awareness Day, the NAVSEA Command Information Office (SEA 001) and the Afloat Cybersecurity Engineering Directorate (SEA 05Q) hosted various displays to inform employees about cybersecurity policy, infrastructure and control systems security, protecting personal and private information and other cybersecurity.

The NAVSEA Cybersecurity Summit hosted 312 attendees from NAVSEA HQs, PEOs & Field Activities to discuss the role Cybersecurity plays in our industry, along with the steps we are taking to improve our Cybersecurity capabilities.

Measuring Success...
Notable 2017 Accomplishments

- Established the Cyber Planning and Response Center (CPRC) as the central location for all cyber incident communications and integration and successfully executed both our first afloat and ashore exercises.
- Conducted an Afloat Combat System Incident Response Exercise bringing together multiple activities to exercise “pre-canned” communication/notification links, processes, and procedures for Afloat Cyber Incident Response.
- NAVSEA’s Red Team request for accreditation was accepted by NSA, a significant step forward in our ability to increase our collective cybersecurity knowledge.
- Initiated a Navy Innovative Science and Engineering (NISE)/219 funded project to document common cyber definitions and practices across our Warfare Centers in support of defining how best to incorporate cybersecurity at each level, from writing requirements and designing systems to implementation, testing and evaluation to sustainment.
- Issued 13 Risk Management Framework (RMF) Authority to Operate (ATOs) and 55 RMF Bridge conversion ATOs.
- Conducted 8 Shore Cyber Technical Assist visits.
- Held the 2nd annual NAVSEA Cyber Summit bringing together 312 individuals from across the NAVSEA Enterprise Cyber Community of Interest and featuring 8 keynote speakers and 48 guest speakers from across the Navy with discussion on specific Enterprise Cyber and IT topics.
- Accelerated fielding of cyber defensive and detection capability for Hull Mechanical and Electrical systems from 40 Ships to 99 Ships over a five year period starting in FY20.
- Successfully installed two non-Permanent Changes (NPC) on Afloat platforms to test and mature cyber defensive and detection capabilities that will be fielded starting in FY20.
- Developed and issued the "Naval Systems Command Enclave Process", providing a Navy-wide (all SYSCOM) process to enable better design and management of all shipboard networks.
- Championed the development and release of the Navy Streamlined Interim Authorization to Test (IATT) process which was approved by OPNAV for Navy-wide use.
- Released the RMF Common Control Inheritance Memo for Surface Navy Control Systems which has increased the efficiency of implementing RMF for individual programs by 10%.
Competitive advantage: NAVSEA empowers its workforce

The People Line of Effort remains the key enabler to Campaign Plan and mission success. We remain committed to attracting, retaining, and developing a workforce inspired to embrace the extraordinary careers and unique opportunities within this great organization. Our NAVSEA workforce continues to demonstrate their ability to innovate and solve problems. We focused on identifying and expanding our communities of practice to provide the pathways for sharing, and together with improved sharing tools are well-positioned for increased collaboration and sharing of lessons learned and best practices across the NAVSEA Enterprise.

The Force Behind the Fleet

NAVSEA exceeded its Wounded Warrior hiring goal by 57% with more than 770 Veterans with disabilities hired onto NAVSEA’s roles. Furthermore, the NAVSEA Mentor, Assist, Train to Excel (MATES) program hosted nine informational events and conducted several social networking initiatives, including the Reverse-Style Career Fair.

In 2017, we graduated 912 sailors from the Navy Afloat Maintenance Training Strategy (NAMTS) Program across our Regional Maintenance Centers and Naval Shipyards.
2017 Accomplishments: Investing in our people

• NAVSEA’s continuum of Leadership programs continues to expand. In 2017, the Commander’s Executive Fellows Program (CEFP) graduated seven members and initiated Cadre IV with four new members; the Journey Level Leader (JLL) Program graduated 29 members and initiated Cadre IV with 25 new members; and the Next Generation (NextGen) Program graduated 29 members.
• Signed out the NAVSEA “Expectations for NAVSEA Supervisors”.
• Successfully rolled out the Enterprise-wide “I Am NAVSEA” Campaign.
• Issued a Command memo on Mentoring and conducted two formal Speed Mentoring events at NAVSEA HQ.
• Developed the framework for the People’s Integrated Essential Resource (PIER) which will provide a web-enabled and intuitive source for “all things people” to expand individual and organizational success.
• Hired 770 veterans with disabilities through the Wounded Warrior Program, exceeding the 2017 goal by 57%.
• The NAVSEA Mentor, Assist, Train to Excel (MATES) Program hosted nine informational events and conducted numerous networking socials, providing support to veteran employees to facilitate their transition to civilian careers and promoting an inclusive environment that improves retention.
• 1,400 NAVSEA engineers and logisticians completed the Reliability Centered Maintenance (RCM) training program providing standard methodology for development of maintenance requirements.
• Navy Experimental Diving Unit (NEDU) received the Surgeon General’s Blue H Award recognizing commands that emphasize health promotion and demonstrating NEDU’s commitment to a culture of fitness.
• NSWC Crane developed and implemented the “Technician to Engineer” Program in collaboration with the University of Indiana which offers professional growth and development opportunities for technicians with the desire and motivation to earn an engineering degree.

Our Divers receiving the Surgeon General’s Blue H Award for recognition of emphasizing health promotion. This is NEDU’s first time to be recognized for this accomplishment and demonstrates the command’s commitment to a culture of fitness.

At Norfolk Naval Shipyard (NNSY) employees attend Employee Development Day to meet with supervisors and review their assigned core competencies, their progress and, with the employee’s input, discuss ways to help reach their full potential through training, experience and job assignments.

Mrs. Robin White, Director, Surface Ship Design & Systems Engineering NAVSEA 05D provides mentoring during the Journey Level Leader (JLL) Cadre IV Speed Mentoring session.

Workforce plan delivered

We delivered the FY2018-20 NAVSEA Civilian Strategic Workforce Plan setting a five-year vision to ensure NAVSEA retains a thriving and effective workforce, prepared to successfully execute the mission of today and the challenges of tomorrow.
The NAVSEA workforce continues to demonstrate they are great innovators and, as an Enterprise, we have made significant strides in the pace of our learning through both increased awareness and improved sharing and collaboration across communities of practice. We have adopted the iNFUSION set of networking tools as a primary means of “sharing” across the Enterprise with the number of NAVSEA users growing from 3,000 to over 17,000 in 2017. We created the NAVSEA Expand the Advantage Wiki containing the strategic and communications plans, training resources, and digital signage material for use across the Enterprise. We established the NAVSEA HVL Community of Practice to share success stories and best practices from throughout the Enterprise as “One NAVSEA.” As quoted by Dr. Steven Spear: “High Velocity Learning is the solving of everyday irritants, frustrations, and workarounds in incredibly complex work environments through an HVL process of discovery, learning, ideas, improvements, innovations, and investments.”

Designing for a High Velocity Learning Environment

- Created HVL Strategy Maps for the NAVSEA Enterprise and for each Field Activity / Command / PEO / HQ Department.
- Created a NAVSEA Communications Plan that combines the HVL and People Lines of Effort and the Culture of Affordability Mission Priority.
- Dr. Stephen Spear conducted a three day HVL Boot Camp Workshop at Norfolk Naval Shipyard.
- Utilized the iNFUSION set of networking tools as a primary means of “Sharing” throughout the Enterprise.
- iNFUSION Road shows / Training events have been conducted at the Navy Yard and at Field activities across the country.
- Created standard HVL Training Material and began integrating HVL Training into existing Continuous Process Improvement Yellow Belt and Green Belt courses.
- Produced several HVL Videos explaining the basic concepts of HVL (See-Swarm-Share-Sustain) through a Warfare Center fleet support example, highlighting different methods of Sharing within the Warfare Centers, and demonstrating the ways that iNFUSION can help with Swarming and Sharing.
- Published success stories in NAVSEA’s monthly publication, “The Observer” and on command social media platforms.
- Established the NAVSEA HVL Community of Practice to share success stories and best practices from throughout the Enterprise.
- Compiled a list of NAVSEA’s existing Communities of Practice / Communities of Interest as another tool for Sharing and Sustaining.
Design for a High Velocity Learning Environment

Activities and organizations across the Enterprise have launched pilots using HVL principles and concepts to tackle opportunities they uncover in the course of their work

- SUPSHIP Bath leadership identified the need to enhance Operational Risk Management for high-risk shipbuilder evolutions and is using HVL concepts for communicating across multiple programs.

- PEO IWS is applying HVL concepts to streamline and improve the contracting process to reduce the overall contracting timeline.

- A team of SEA 10 and Warfare Center Employee Services (ES) and Human Resources (HR) personnel used HVL concepts to standardize the Permanent Duty Travel process and set up a site to collaborate and make additional improvements as opportunities arise.

- AEGIS Tech Rep has implemented HVL concepts to improve communication among their workforce with an internal collaboration tool.

- Combat Direction System Activity (CDSA) Dam Neck, part of NSWC Dahlgren Division, developed a High Velocity Learning Tracker that enables employees to post any issue they see that needs collaboration and attention. Building off the 4 S’s of HVL—See, Swarm/ Solve, Share and Sustain—once an issue is populated in the “See” phase, a “Swarm” Lead is assigned to swarm and solve the issue. It is then open for input from anyone in the command during the “Share” phase and once the initiator feels the issue is solved, it is moved to the “Sustain” phase and re-evaluated. The CDSA Commanding Officer issues “On the Spot” awards to employees to recognize their contributions to the site.

- CDSA Dam Neck implemented HVL to speed up the Ship Self Defense System Engineering Change Proposal (ECP) Implementation Process to track actions and ensure the ECPs can be implemented in the necessary time frames.

- At the Naval Sea Logistics Center (NSLC), employees are encouraged to identify problems and suggest new ideas though the “NSLC High Velocity Learning Challenge,” which provides a simple channel for all employees to submit ideas for improvements to daily processes. Employees are encouraged to submit ideas to a dedicated NSLC HVL email inbox and include a simple problem statement, description, impact and recommendation. The Commanding Officer, Executive Officer and Technical Director review the submissions based on criteria such as financial impact, cost benefit, level of effort and feasibility and then award employees with either a letter of appreciation or a small cash award. The HVL Challenge award is based solely on detecting the problem, or the “See” element of HVL. If the idea is under NSLC’s authority to implement, a small team is established to “Swarm” the problem, “Share” the results, and “Sustain” the improvement. Ideas that NSLC cannot implement unilaterally are shared with organizations that may be in a position to leverage the idea.
The Anechoic Flow Facility (AFF) at NSWC Carderock Division is a quiet, closed-loop, low-speed air-flow facility with low turbulence levels, built to conduct flow-generated noise studies. A revitalization effort on the facility gave it a new active-turbulence grid. This upgrade allows the engineers to create a flow field with a lot of turbulences so they can search comprehensive measurements of unsteady lift due to large-scale turbulence.

NSWC Carderock

NSWC Carderock Division established a new Ballast Water Research Laboratory in December 2016. Through the use of the new lab, engineers and scientists at Carderock will be able to study ways to treat ballast water so that by the time ballast water is discharged at a ship’s final destination, those organisms that lurk in the water will not be released to live and damage the ecosystem. This ultimately allows Navy ships to access ports by adhering to environmental laws and standards for ballast water discharge.

NSWC Crane

NSWC Crane internally defined, designed and developed technical career paths which accelerate the learning and experience of 177 Engineers and Scientists with 84 completing level I certification. The program is a technical certification approach modeled after the personnel qualification standards for entry-level engineers and scientists. The certification is a commitment from the organization to invest in employees to offer career growth and development opportunities. NSWC Crane has developed dedicated lab space for rapid innovation and experimentation, most notably the Rapid Innovation Prototyping Laboratory which consists of 8,636 square feet of open space architecture. Future investments include a dedicated innovative and collaborative office space for I&T to be used to swarm emerging technical challenges that threaten on-time delivery of critical operational mission capabilities to the fleet.

NSWC Corona

NSWC Corona

NSWC Port Hueneme

USS Dewey (DDG 105) arrives at NSWC Port Hueneme Division on Feb. 27 for a combat and weapon systems assessment, hands-on system training, product support and Underway Replenishment training.

NSWC Philadelphia

Douglass Bryant, a materials engineer with NSWC Philadelphia Division, carefully places a sheared screw into a scanning electron microscope (SEM) at the Navy Yard in Philadelphia on Aug. 30. SEMs provide engineers like Bryant with a high-resolution, high-magnification image of materials that have failed in the fleet, to discover if the part failed from normal wear and tear or environmental causes such as exposure to extreme temperatures or corrosive chemicals.

High Velocity Learning Environment

NSWC Carderock

NSWC Crane

NSWC Philadelphia

NSWC Port Hueneme

Douglass Bryant, a materials engineer with NSWC Philadelphia Division, carefully places a sheared screw into a scanning electron microscope (SEM) at the Navy Yard in Philadelphia on Aug. 30. SEMs provide engineers like Bryant with a high-resolution, high-magnification image of materials that have failed in the fleet, to discover if the part failed from normal wear and tear or environmental causes such as exposure to extreme temperatures or corrosive chemicals.
A team of U.S. Navy scientists and engineers aboard NSWC Panama City Division, including Dr. Josh Kogot, Dr. Michelle Kincer, and Dr. Ryan Kincer, announced earlier this year that they had successfully recreated a natural material used for marine wildlife defense to assist military personnel. The hagfish slime thread has been compared to spider silk; both are natural, renewable materials that could one day replace synthetic products derived from petroleum-based precursors. The slime thread has comparable mechanical properties to Kevlar, a synthetic fiber used as a reinforcing agent for rubber products and protective gear. The synthetic hagfish slime potentially could be used for ballistic protection, fire fighting, anti-fouling, diver protection or anti-shark spray.

British Royal Navy First Sea Lord Adm. Sir Philip Jones is briefed on U.S. Navy high energy laser programs on Oct. 2 by Dr. Chris Lloyd, left, High Energy Laser Lethality Lead at NSWC Dahlgren Division. Lloyd explained the importance of rigorous modeling and laboratory testing against target materials to ensure high energy laser systems are built that meet the requirements of the warfighter once fielded. More than 18 NSWC Dahlgren Division subject matter experts briefed Jones and his delegation on programs that included human systems integration, gun systems, ballistic missile fire control, directed energy and electric weapons such as the Laser Weapon System.

A visitor wearing augmented reality glasses at the 2017 Annual Navy Technology Exercise (ANTX) engages in mixed reality training as he fires on fast attack craft and fast inshore attack craft (FAC/FIAC) with an M-2HB .50 caliber machine gun simulator. The FAC/FIAC Integrated Training Portable Embark.

Rear Adm. Jesse Wilson, Naval Surface Force Atlantic commander, emphasizes the importance of innovation within the strategic environment as he spoke to a group of civilian technologists and military officers at the first in a series of Surface Warfare Innovation Workshops held at the Navy’s newest Innovation Lab, Naval Surface Warfare Center Dahlgren Division (NSWCD) and the Navy War College co-sponsored the event that encouraged NSWCDD scientists and engineers to throw away the rule book as they brainstormed to solve future war fighting scenarios. “The workshop enabled Navy leadership to share current and future Fleet concerns with our new and mid-career personnel to develop united, focused, and creative solutions,” said NSWCD I-Lab Director of Innovation Nelson Mills.

VADM Bill Merc (DCNO for Warfare Systems, OPNAV N9) and VADM Dave Johnson (Principal Military Deputy Assistant Secretary of the Navy for Research, Development and Acquisition) are briefed by Dr. Christian Shumacher of NUWC Newport on a fuel cell that was demonstrated at the Narragansett Bay Test Facility in August as part of the Advanced Naval Technology Exercise (ANTX), “Battlespace Preparation in a Contested Environment.” For the first time, NUWC Newport hosted its ANTX event simultaneously with NSWC Panama City.
In support of a CNO directed urgent need, the COMSUBFOR Theater Anti-Submarine (TASW) Offset rapid fielding project was initiated to meet a capability gap in a challenging operational environment. The Program Executive Office Submarines (PEO SUB) Maritime Surveillance Systems (PMS 485) was tasked to transition the DARPA Transformational Reliable Acoustic Path System (TRAPS) and the ONR Carina Glider program, systems to meet the fleet need on an extremely aggressive schedule. PMS 485 utilized rapid incorporation of R&D operational testing lessons learned to modify TRAPS and CARINA Glider systems to support successive real-world operations.

The TASW Offset Acquisition Team succeeded in revising the S&T designs for the new Area of Responsibility (AOR), developmentally testing, fabricating, and deploying for operational use the Navy's first large deployable, agile and scalable distributed sensors in an unmanned system configuration in a very challenging operational environment. In conjunction with the fleet, this required developing an operational construct for deployable systems for simultaneous operations in support of two Theater ASW commanders in less than 24 months. This also involved establishing and fielding distributed communications, control and data INFUSION architecture for deployable sensor systems which required organizational integration across technology partners, acquisition program offices, and operational commands.

Specific overall accomplishments include:
1. Prototyped Navy's first large deployable, agile, and scalable distributed sensor system yielding unmanned system TTP development in challenging operational environments.
2. Developed an operational construct for deployable systems.
3. Fielded distributed communications, control, and data INFUSION architecture for deployable sensor systems.
4. Organizational integration across technology providers, acquisition program offices, and operational commands - Accelerates development of deployable surveillance acquisition and operating concepts.
SERMC held their latest Strategic Executive Planning Session (EPS) off site in June utilizing 29 High Velocity Learning (HVL) inputs received from the workforce. Output of the EPS resulted in 4 Stretch Goals encompassing 18 Strategies and associated tactics:

- SERMC maintains the best trained, most motivated, adaptable, and safest workforce in the Navy
- Foster a culture of affordability to drive cost-conscious decisions at all levels
- Deliver ships to the Fleet on-time with requisite quality
- Foster a culture of Cybersecurity while fully leveraging IT awareness

SERMC’s HVL Plan includes feedback from the workforce via two methods, the “Push” method and the “Pull” method utilizing Idea Boards, Idea Cards, and brainstorming sessions.