The Chronicle

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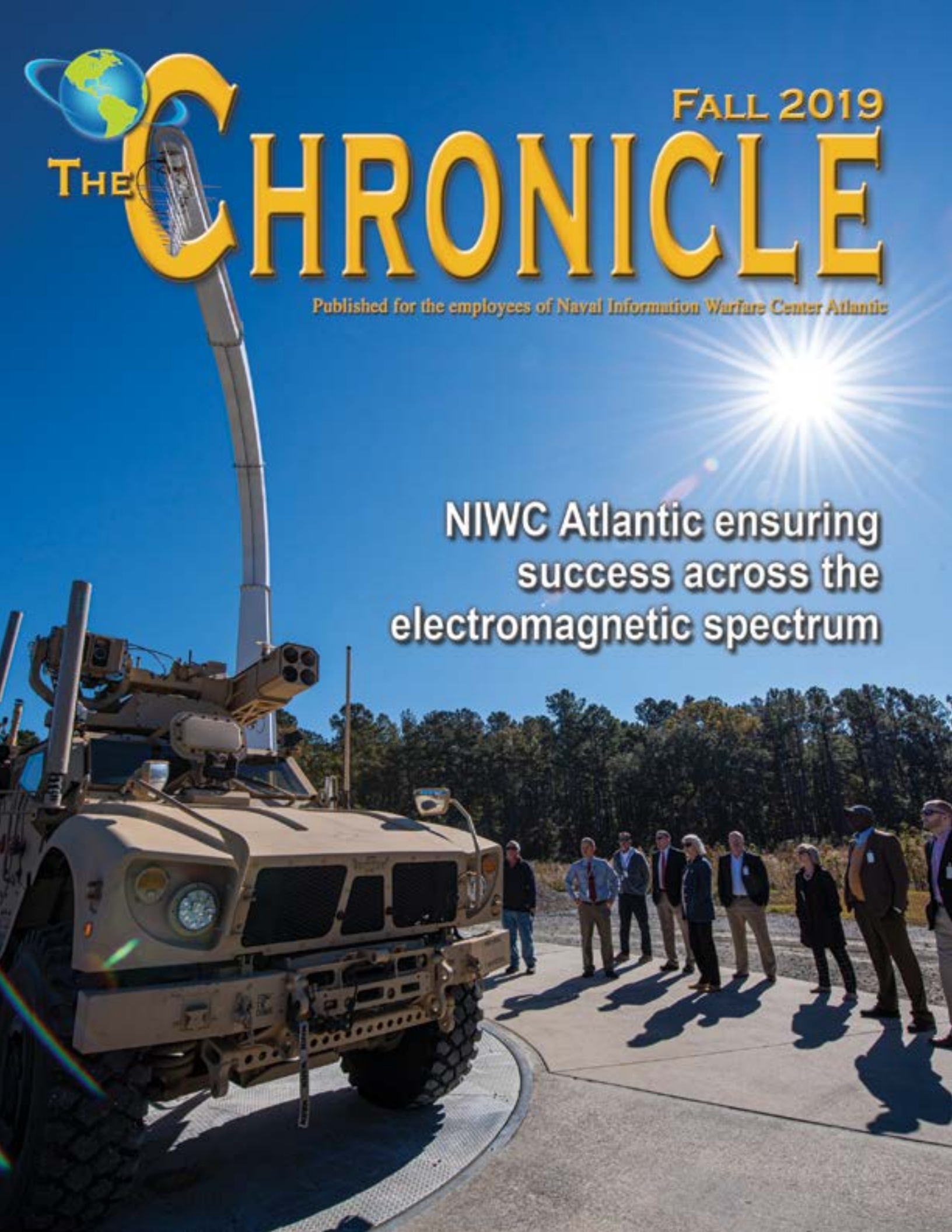
NIWC Atlantic ensuring success across the electromagnetic spectrum



Eagle Bots from Eagle Nest Elementary School put their robots through the paces at a recent FIRST Lego League Robotics qualifer event at River Oaks Elementary School. NIWC Atlantic employees mentored all 24 teams participating in the qualifier. See story on page 30. (Photo by Joe Bullinger)

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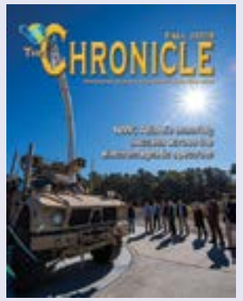

On the cover
Staffers from South Carolina's Congressional delegation observe operations at NIWC Atlantic's RF Facility. The facility is one of a few on the East Coast providing electromagnetic interference testing and assessments. See story on page 3. Photo by Joe Bullinger.

NIWC Atlantic employees stationed at NSA Naples, Italy were among those celebrating the Navy's 244th birthday at a Naval Support Activity Naples-hosted birthday ball Oct. 26. For more on Navy and Marine Corps birthdays see pages 20 and 21.

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NIWC Atlantic's mission is to serve our nation by delivering information warfare solutions that protect national security.

NIWC Atlantic is part of the Naval Research and Development Establishment (NR&DE)..

THE CHRONICLE

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The Chronicle is a quarterly publication designed for NIWC Atlantic employees. Its purpose is to inform, educate, entertain and generate new ideas.

Contents of The Chronicle are not necessarily the official views of, or endorsed by, the U.S. Government, the Department of Defense, the U.S. Navy or NIWC Atlantic.

Reddy named NIWC Atlantic Executive Director

Former Deputy Executive Director Peter C. Reddy was recently selected by Naval Information Warfare Systems Command (NAVWAR) to become NIWC Atlantic Executive Director.

Reddy has served as NIWC Atlantic acting executive director since July 2019 and as deputy executive director since January 2019. The former Marine Corps colonel retired after 30 years of active service in a variety of command, control, computers, communications and intelligence (C4I) assignments around the world.

Reddy entered federal civil service as chief engineer for the Expeditionary Enterprise Systems and Solutions Sub-Portfolio at NIWC Atlantic. He was selected as systems engineer for the Marine Corps and Special Operations Command Portfolio in March 2015. In January 2017, he was selected as NIWC Atlantic Chief Engineer/5.0 Engineering Competency Lead.

A 1984 graduate of the University of Virginia, Reddy has three master's degrees in systems engineering (electronic warfare), strategic studies and business administration. Reddy is certified Level III in the Defense Acquisition Program Management and Systems Engineering career fields; as a certified systems engineering professional; as a project management professional; and as a professional engineer.

Reddy

Troupe on board as NIWC Atlantic CMC

AVCM (AW/SW) Tinesha L. Troupe was recently named NIWC Atlantic Command Master Chief, serving from the Hampton Roads detachment.

Born in Langdale, Alabama, she graduated from Valley High School and enlisted in the U.S. Navy in 1994.

She completed Aviation Electronics Technician "A" School in Millington, Tennessee, before reporting to her first squadron, Patrol Squadron One Zero at Naval Air Station Brunswick, Maine, in January 1996.

From January 1998 to September 2000 she was assigned to the Gray Knights of Patrol Squadron Four Six in Whidbey Island, Washington. Troupe served as an IATS/ATS technician at Aircraft Intermediate Maintenance Department (AIMD) onboard Naval Station Oceana in Virginia Beach, Virginia, from October 2000 to November 2003.

Troupe then reported to USS Harry S. Truman (CVN 75) at Naval Station Norfolk, where she earned her Enlisted Surface Warfare designation and advanced to Chief Petty Officer.

From November 2006 to September 2009, Troupe served at Fleet and Family Support Center in Norfolk, Virginia, as the Leading Chief Petty Officer for the center's seven sites located throughout Hampton Roads.

Remaining in Norfolk, she returned to USS Harry S. Truman (CVN 75) where she served from until September 2013. Her next assignment took her to USS Gerald R. Ford (CVN 78) where she advanced to Master Chief Petty Officer and served as AIMD LCPO from September 2013 to October 2019.

Troupe

A 20-foot steel turntable at Poseidon Park can accommodate vehicles up to 27.5 tons. Photo by Joe Bullinger

Providing sought-after testing capabilities

RF Test Facility saves time, money

By Diane Owens
NIWC Atlantic Public Affairs

After antennas are installed on military vehicles, it's extremely important to confirm they operate properly — and don't interfere with fuel, personnel or ordnance.

NIWC Atlantic's Radio Frequency (RF) Test Facility at Poseidon Park in Charleston is one of the few facilities on the East Coast with the employee knowledge and capabilities to perform tests and make those assessments.

Staffers working for members of the U.S. Congressional delegation from South Carolina learned about the capabilities of the facility during a recent visit to Joint Base Charleston-Naval Weapons Station.

In 2006, a 20-foot steel turntable capable of holding vehicles up to 55,000 pounds was installed, along with a prefabricated building designed to house equipment supporting testing.

A 33-foot-tall Gantry arm was added in 2011 to perform three-dimensional (3D) antenna measurements, giving the customer a spherical representation of antennas' performance. To accomplish this, an antenna (also known as a probe) attached to the Gantry arm is designed to take both horizontal and vertical polarized measurements to produce a 3D representation of a particular antenna. Different probes are used for low frequency and high frequency tests.

Over the years, additional equipment was installed to perform other tests — a composite 4-foot turntable for direction-finding antenna tests and a 30-foot square, 18-inch-thick concrete pad to hold vehicles that weigh more than 55,000 pounds.

A nearby road course is used to support the RF Test Facility for distance tests, Communication-on-the-Move and shock and vibration testing.

NIWC Atlantic technicians can also perform antenna comparisons to determine which work best, measure and analyze weight distribution of large vehicles and perform co-site testing to determine if antennas on the same vehicle interfere with each other. Warfighters in theater can report antenna problems and have the NIWC Atlantic team replicate the situation to determine a solution.

The facility's specialized equipment has been used to test watercraft; mine-resistant, ambushed protected vehicles; tanks; tank retrievers; unarmored and armored Humvees; and tactical and combat vehicles. Backpacks, handheld and body worn devices are tested, too, to determine how RF reacts when users change positions.

Customers sometimes ship unmounted antennas for testing and personnel design and fabricate custom mounts in the lab's workshop.

If equipment can't be sent to the RF Test Facility, employees can travel to the equipment in a fully-equipped mobile test vehicle. The vehicle houses a suite of electronic devices necessary to conduct the appropriate tests.

Internally, having NIWC Atlantic integration facilities and the RF Test Facility in close proximity is convenient; it saves time and results in considerable cost savings to the customer.

For questions or further details, contact Wayne Lutzen (*wayne.lutzen@navy.mil*), Test, Cyber and Forensics Service Center Manager.

Photo by Sgt. Timothy Smithers

A JTLV displays its ability to handle multiple terrain types during a recent demonstration at Marine Corps Base Camp Pendleton, California. NIWC Atlantic engineers designed a large mobile kit that allows technicians to perform critical JLTV testing and integration functions at fielding sites around the world.

Ingenuity, teamwork speed JLTV delivery to Marine Corps units

By Steve Ghiringhelli
NIWC Atlantic Public Affairs

Naval Information Warfare Center (NIWC) Atlantic engineers helped achieve initial operational capability (IOC) nearly a year ahead of schedule for their integration work on the U.S. Marine Corps' Joint Light Tactical Vehicle (JLTV).

"It was a huge feat to get where we are today," said Jay Moore, JLTV Total Package Fielding (TPF) project lead for the Expeditionary Warfare Department at NIWC Atlantic. "We had little to no time to come up with something; but we did whatever was needed to move us toward the finish line."

The engineering teams noted two major contributors helped reach the IOC milestone in August: a mobile test kit developed at NIWC Atlantic's Land Systems Integration (LSI) facility and a flurry of engineering rigor at the command's Digital Integration Facility (DIF).

The mobile kit, known as the "gold set," is a wheeled container comprising hardware and test benches for LSI technicians based in the field to access parts in a compact, centralized hub. The set can perform critical testing functions for the JLTV and avoid the disarray of components in cardboard boxes sprawled out in the sand or mud.

Working in tandem, the DIF's advanced engineering teams worked out C4ISR-related challenges by designing modifications and sending over prototypes to implement.

Chris Canning, a systems engineer at the DIF and JLTV technical lead at the facility, said his team provided the engineering precision behind much of those requests for C4ISR systems optimization.

"Jay's team has done a terrific job with some real quality technicians who are good at identifying areas to better fit Marine Corps requirements," Canning said. "Then, we do the designing, many times from scratch. We make sure the drawings are all locked down, ensure the prototyping can begin."

Now, the Fleet Marine Force has a truck capable of moving heaven and earth with seamless communications, reconnaissance, enemy-detection capabilities and multiple weapons system platforms — all with the grab, swipe or pinch of a commander's fingers.

"It's like going from a flip phone to a smartphone," Moore said.

Following years of war in Iraq and especially Afghanistan, thousands of Humvees were up-armored to meet the demand for blast-proof vehicles. That led to the U.S. military's quintessential all-terrain vehicle for over two decades markedly losing payload and off-road agility. Similarly, the larger MRAP newcomer was better protected but limited in the cross-country domain.

Photo by Joe Bullinger

NIWC Atlantic electronics technician Daniel Kohl checks cable connections on the 24-volt power distribution unit stored in a ground-breaking device called the "gold set."

When it was clear that something different was needed, DOD commissioned Oshkosh Corporation to design and build a truck from the ground up with modern automotive ingenuity and the latest C4ISR infrastructure to theoretically replace the Humvee in a one-for-one swap.

Fast forward to August 2018, and the Marine Corps requested support from NIWC Atlantic to perform the testing and integration of communications equipment on JLTVs that were shipping directly from the manufacturer to the field.

Everything from onboard smart-screen displays and power supplies to amplifiers and radio transmitters required testing—and sometimes replacing — in addition to hundreds of items listed on 60 pages of inspection sheets.

Conducting such complex integration work in the field would be substantially more difficult than on base; however, by leveraging skillsets and creativity across multiple disciplines, NIWC teams surmounted those challenges.

"With the gold set, we can basically shut the door, roll it up and ship it wherever we need to go," Moore said.

The gold set's mobility and user-friendliness are its greatest assets, making the kit a huge hit within the Marine Corps G6 community, noted Jennifer Anderson, JLTV TPF lead at NIWC's Expeditionary Warfare Department. The LSI team has even created modification drawings to help other organizations reproduce the gold set elsewhere.

Anderson underscored the value of Moore's idea to package proven capabilities on base and convey them to the field. "You can see how Jay was able to design something that took [the integration] of a whole building and put it into a box to emulate elsewhere," she said. "From zero … we created this from scratch."

Before declaring IOC on August 2, the U.S. Marine Corps' program office in Quantico, Virginia, monitored the JLTV's headway at Marine schoolhouses, training commands and an infantry battalion at Camp Lejeune.

In the years to come, the Marines will receive more than 15,000 JLTVs, which include four variants — the utility, general purpose, heavy guns carrier and the close combat weapons carrier models. Moore said the goal is to integrate up to 50 JLTVs a month at each MEF; the Marine Corps is currently on track to receive nearly 500 by year's end.

In hindsight, the LSI division chief at NIWC Atlantic looks back on the last year and attributes much of his organization's successes to collaboration across multiple disciplines.

"This was the ultimate team of teams project," said Pete Ward. "It's a perfect example of how working across diverse teams, divisions and competencies builds positive interactions that can more effectively support the warfighter.

"Everyone worked together to pull this off, early and fast," he added. "It wouldn't have happened if the teams hadn't appreciated and leveraged each other's different capabilities."

Engagement, collaboration at 52nd SBIOI

Photos by Joe Bullinger

The Charleston Defense Contractors Association's hosted the 52nd Small Business and Industry Outreach Initiative (SBIOI) Oct. 17 at the Trident Technical College.

The SBIOI gathering focused on fostering small business participation in contracting and expanding industry engagement at all levels to increase shared understanding.

NIWC Atlantic Commanding Officer Capt. Wesley Sanders, left, kicked off the day with an update on command initiatives.

NIWC Atlantic Contracting Competency Manager Steve Harnig, pictured above, gave a contracts update. Other center participants included Information Warfare Research Project Competency Lead Don Sallee, Enterprise Systems Department Head Patrick Fitzgerald, Command Information Officer Sebrina Lemire, Strategic Human Capital Programs and Organizational Development Supervisor and OPSEC Manager Lane Melton and Manny Lovgren, industry team lead for the Contracts Industry Council (CIC).

NIWC Atlantic support cells bolster cyber resiliency

By Jerry Sekerak
NIWC Atlantic Public Affairs

In light of ever-increasing cyber threats around the world, NIWC Atlantic is increasing cyber resilience throughout the command and for the Navy.

NIWC Atlantic cybersecurity engineers are working to ensure each person involved in the lifecycle of a system understands their role in cybersecurity and is executing their duties in that role to the best of their ability. They are doing that by building a method to share cybersecurity knowledge and expertise between their various projects and teams.

"We focused our fiscal year (FY) 19 Cyber Warfare Technical Growth Area (TGA) on shoring up our foundation with cybersecurity education, training, and mentorship of several pilot projects," said NIWC Atlantic Lead Systems Engineer (LSE) Hank Osborne. "We intend to transition the TGA efforts into what we are calling the Cybersecurity Support Cell in FY20."

According to Osborne, the support cell will operate much like a cybersecurity consulting force made up of subject matter experts who can share lessons learned and best practices across many projects and teams. The support cell can also provide a fresh set of eyes on a project to help identify any areas of improvement that might otherwise get overlooked or deemphasized.

Much more than preventing hacking, Osborne states the goal of cybersecurity, and the support cell, is to ensure confidentiality, integrity, and availability of information needed to accomplish a mission. It can provide the ability to detect attacks and respond to those attacks by hackers. There are areas of cybersecurity that focus on recovering a system regardless of whether there was a loss resulting from hackers, natural disasters, or even a system user's unintentional actions.

Cybersecurity is a full lifecycle concern for all products delivered to the warfighter. Even systems that are purely mechanical/kinetic are designed and modeled on computer systems that need to be secure.

"You may have noticed striking similarities of aircraft produced by our adversaries compared to those the DOD has developed," said Osborne. "We need to begin protecting information and systems using cybersecurity principles as early as possible in the engineering lifecycle and continue through to the disposal of the systems. Anyone can affect the security of a system or information regardless of when and where they are involved in the lifecycle."

Osborne added that actions and non-actions related to cybersecurity can happen during planning, design, procurement, contracting, building, integrating, testing, installing, operations and sustainment of the system. Non-action is a big concern within the DOD, he said, because many employees have never been trained to be concerned about security to the degree the DOD emphasizes for information and information systems.

"Yes, we all get our annual Cybersecurity Awareness training, but that training does not go into the details of what each employee's role is within their project or [team]," said Osborne. "For example, there is no formal required training on the subject of supply chain risk management concerns that affect procurement specialists and industry partners who supply the hardware and software for the systems we are building."

That's where NIWC Atlantic Information Systems Security Officer Kaila Perry comes in. Perry works on a Program Management Office of Information Technology (PMOIT) team for Naval Sea Systems Command in Norfolk. She recently drafted a portable electronic devices (PEDs) restrictions policy for employees working in different classification areas, and she is currently working on drafting an incident response policy.

"We protect systems against threats," said Perry. "Risks are inevitable, so we use the Risk Management Framework (RMF) tool to manage our risks in a way to be sure they're not exploited, and our information is not compromised or lost. We set the foundation for the way things should be done here to ensure the security of the information, the facility and the systems."

Looking at the picture from the top down is Perry's and Osborne's boss, NIWC Atlantic's Mission Assurance Senior Competency Manager Joe Henline, who emphasizes that good system security engineering and sustainment planning leads to healthier systems delivered to the warfighter.

"That helps make it easier to maintain a system's cyber hygiene/resiliency," said Henline. "Just as it takes a community to raise a child, it also takes our community to develop and maintain healthy systems for our warfighters," he said.

Still, as Osborne points out, formal education alone does not fully prepare graduates to the level of detail that is emphasized on cybersecurity within the DOD, which goes well beyond what is required by commercial industry.

"[That's why] we have to be diligent and purposeful in identifying and delivering relevant cybersecurity education and training to employees in all roles throughout the engineering lifecycle, which is a primary goal that we are trying to achieve through the Cyber Warfare TGA and by standing up the Cybersecurity Support Cell," said Osborne.

Photos by Joe Bullinger

NIWC Atlantic employee Jeremy Dinda removes a part from a 3D printer. Dinda is a mechanical engineer in NIWC Atlantic's On Demand Manufacturing (ODM) lab.

On Demand Manufacturing

Only limitation is the imagination of the engineer

Since procuring its first 3D printer in 2016, NIWC Atlantic's additive manufacturing (AM) team is not only using the technology to increase warfighter readiness and sustainment, but is exporting On Demand Manufacturing (ODM) capabilities across the command, to Hampton Roads, Virginia; Naples, Italy; and Stuttgart, Germany.

As part of the Logistics and Lifecycle Engineering Competency, the ODM lab offers manufacturing agility through low-volume production in maintenance and operational Navy environments. The lab currently has 12 3D printers specializing in different applications, nine that can print in plastic and polymer and three printing in metal. They can print small to huge (about the size of a submarine hatch or a compact freezer) scale parts. They can print small polymer pieces with intricate details, like a model they printed showing the inside layout of a Stuttgart comms center, and miniature scale models of buildings, like one they produced for an air traffic control center.

They print in low-cost, durable plastics, polymers, composites, steel, titanium, wax, metal infused plastic, rubberized plastic and alkaline soluble support material. They can print lightweight, flexible parts and load-bearing components. They can print with metal powder in the filament, then cook and shrink the piece in a high temperature furnace. They can make moving parts by building them in one piece then dropping them in an alkaline bath to "erase" the connecting parts, referred to in industry as "living hinge."

The lab recently added metal capability that supports tool steel, stainless steel and Inconel. In this is new application of an old technology, the metal powder is combined with plastic and wax in a filament. The part is printed then washed in an alkaline solution to dissolve the wax, leaving behind the plastic. It is then sintered in a furnace to remove the plastic and recrystallize the metal grain structure.

According to the lab's manager, they are just scratching the surface of using and exporting the capabilities of AM. "We want this lab to become a 'makerspace' where people can come and learn about AM and make solutions for unique military needs," said ODM Lab Manager Josh Heller. "We can certify the user on the equipment and teach them how to validate and verify their AM component to meet project or product requirements. The applications of this technology are unlimited. It's really up to the imagination of the engineer," he added.

Heller was assigned to the Digital Integration Facility when NIWC Atlantic purchased its first multi-jet printer. Since then the AM team has come a long way to develop, integrate and operationalize ODM across NIWC Atlantic.

They recently sent new 3D printers to fleet concentration areas in Virginia and Italy, and to Germany, so they can make parts locally to enable maintenance and sustainment.

AM builds a product in layers based on computer-aided design (CAD) drawing specifications. Depending on the complexity of the finished product, AM can take hours, a day or a week, but is still faster — and cheaper — than finding a commercial product, creating and submitting contracting documents, soliciting bids, selecting a vendor, sending specs to a manufacturer and waiting for the product to arrive.

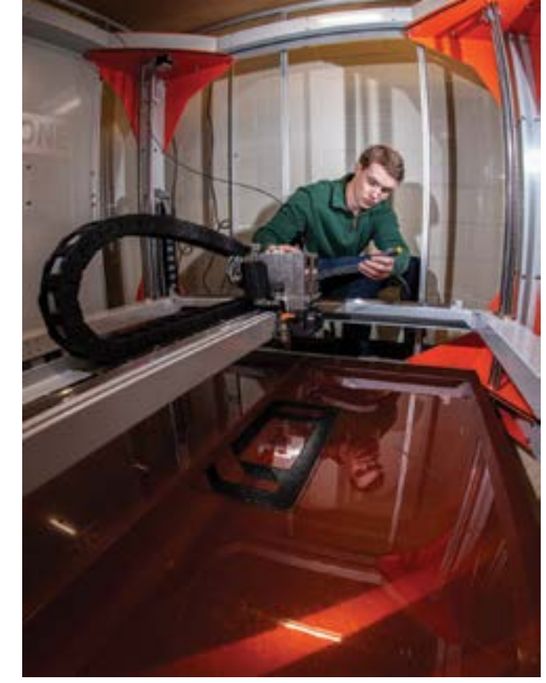
"We want to push the envelope on the use of additive manufacturing to increase readiness and sustainment for warfighters," said Logistics and Lifecycle Engineering Competency Lead Brad Hoisington. "The capability to produce components on demand, close to the point of need is truly a game changer for us."

From the start the lab has worked closely with NIWC Atlantic depots performing ship maintenance and sustainment. They also actively support NIWC Atlantic Science and Technology (S&T) teams to use AM technology to build prototypes and innovative products. Showing military sponsors a prototype has proven to be more effective than presenting a white paper. The ODM labs' AM subject matter expert (SME) Hunter Smith has two patents for his AM-created innovations.

"We are getting plenty of business from 7.0 (S&T) and the depots, but we really want to push AM capabilities to our integrated product teams (IPTs)," Heller said. He and Smith have been reaching out to NIWC Atlantic IPTs to identify their needs and provide 3D-printed solutions. "We are actively pursuing buy-in from the IPTs on using AM to save time and money," Heller said. "This represents a change in their process, so we have to demonstrate to them that it's in their best interest."

NIWC Atlantic employee and On Demand Manufacturing lab manager Josh Heller feeds extrusion material into a 3D print head.

AM, Heller added, also represents a change in how to think about design. "For example, you can design an MRAP bracket made from steel, or you can design it made from aluminum — it makes such a huge difference in weight, space, cost and time to use a different material," Heller said. "AM creates a new design space that allows for previously unobtainable designs. It allows for widespread customization and solutions tailored to specific missions," he said.



NIWC Atlantic employee and Additive Manufacturing (AM) Subject Matter Expert Hunter Smith makes adjustments to a large AM printer in NIWC Atlantic's On Demand Manufacturing (ODM) lab.

One way the team is spreading the word about their capabilities is with employee rotations in the lab. "Our goal is to become a first stop for all intern and New Professional rotations, so we can teach and certify them in AM. Then they can go to their permanent assignments with that knowledge and make contributions right away with innovated AM solutions to challenges," Heller said. Once they are taught and certified, they will have access to the equipment and can take advantage of the command's investment in tools to help them support the warfighter in their permanent assignment.

Manufacturing close to the point of need is the ultimate goal of ODM. Under the ODM umbrella are capabilities such as hybrid production with AM and traditional subtractive manufacturing (SM), and reverse engineering of replacement parts to repair systems with end-of-life parts no longer available. Also, since complexity is free when designing with AM, multi-piece parts can be simplified into few parts, making maintenance and support easier and cheaper. The NIWC Atlantic lab also has a 3D scanner with 3D modeling software capabilities and high computing workstations.

Digital manufacturing requires managing vast quantities of data, and the Charleston team is working with NIWC Pacific to collect metrics from different warfare centers and develop a network to answer the challenges of this technology. They are developing Digital Thread AM to

Continued on page 15

Photos by Cpl. Eric Tso

U.S. Marines with C Company, 1st Battalion, 3rd Marine Regiment, patrol to Landing Zone (LZ) Boondocker from LZ Eagle using a Marine Common Handheld (MCH) tablet during exercise Island Marauder 2019 on Marine Corps Base Hawaii, Kaneohe Bay, Sept. 25, 2019. During the exercise, NIWC Atlantic engineers and scientists supported a range of advanced command and control systems used by the Marines to help DOD observers better understand how Marine might use the technologies on the battlefield.

NIWC Atlantic supports Marine technology at Island Marauder 2019

By Steve Ghiringhelli
NIWC Atlantic Public Affairs

In late September, teams of NIWC Atlantic engineers and scientists traveled to Kaneohe Bay, Hawaii, to support satellite communications systems used by Marines during Island Marauder 2019.

Essentially a technology demonstration, the Sept. 25 exercise sponsored by Marine Corps Systems Command aimed at prove the efficacy of cutting-edge command and control (C2) products. A contingent of approximately 65 Department of Defense (DOD) decision-makers — including NIWC Atlantic Commanding Officer Capt. Wesley Sanders — observed the event to better understand how emerging technologies can be used in war.

"Just because you give the warfighter tools doesn't mean there's one cookie-cutter way to use them," said NIWC Atlantic's Karl Eimers, chief engineer for Island Marauder 2019. "That's just the history of modern warfare — outsmart your enemy by better using tools available to everyone."

Nearly two dozen NIWC Atlantic technical experts arrived in Hawaii days and weeks before the exercise to set the digital stage for the hundreds of stakeholders either exhibiting or observing the latest advancements in Marine C2 systems.

Those technologies included Networking on the Move (NOTM), Marine Air Ground Task Force (MAGTF) Common Handheld (MCH), Tactical Service Oriented Architecture (TSOA), Target Handoff System version 2 (THSv2) and Joint Tactical Common Operational Picture (COP) Workstation (JTCW).

Island Marauder 2019 involved a fictional training scenario in which over 100 Marines came ashore, linked up with host-nation forces, detected an imminent threat and fought the enemy in a disaggregated and deteriorating situation.

To fight while on the move required demonstrating fast and secure C2 capabilities through NOTM, one of the overarching technologies showcased during Island Marauder 2019.

"When commanders want to push troops forward, NOTM lets them have eyes-on while still maintaining command and control to fight the fight," Eimers said. "In Island Marauder, Marines scrambled from tents, jumped into separate vehicles and wirelessly demonstrated that effectiveness.

"Marines on the move also present a much harder target to the bad guys," he added.

NIWC Atlantic technicians helped integrate NOTM into everything from command posts and vehicles to MCH and THSv2 devices. In the hands of Marines, the tablets help squad leaders communicate securely, scan the tactical picture using satellite imagery and even plot GPS coordinates to call

U.S. Marines with C Company, 1st Battalion, 3rd Marine Regiment, come ashore Kaneohe Bay, Hawaii, on Sept. 25 during exercise Island Marauder 2019.

for mortar, artillery and naval gunfire.

During the exercise, NOTM demonstrated how an advancing naval expeditionary force and its commanders could instantaneously access software that normally sat in a tent far from the fighting. Importantly, the capability sets the right conditions for Marines to establish expeditionary advanced bases of operations (EABOs), an emerging component of naval warfare.

NOTM was also demonstrated aboard the military's Utility Task Vehicle (UTV), a rugged, lightweight vehicle made for moonscapes and other tough off-roading terrain.

Outside of the tablets and UTVs, most of Island Marauder was a demonstration of sophisticated software capabilities not visible to observers, said Alex Hahn, team lead for Marine Air Ground Task Force C2 Systems and Applications (MC2SA), which handles U.S. Marine Corps software programs such as TSOA and JTCW.

"The big thing this year was the interoperability of applications and programs that run in the background," she said. "There were the normal hurdles of setting up a network and bringing together a bunch of disparate systems. But in terms of taking existing systems and bringing along more developmental technology, or a baseline that hasn't been fielded yet, I think the scenario was executed quite well."

Even though Island Marauder was way past the testing phase, the demonstration provided good learning opportunities to evaluate previously tested systems, added Ryan Longshore, NIWC Atlantic NOTM team technical lead.

He said studying and perfecting technology is a task that never ends.

"Sure, you want every exchange of information across multiple systems to go seamlessly," Longshore said. "But there is always room for improvement — and that means across all of our DOD systems.

"In the sand and filth and heat of battle, there is no such thing as a jam-proof rifle," he said. "In other words, something may work great in the lab, but it needs to work great when you're being shot at. That's why technology and engineering are always evolving and growing."

MC2SA team members said emerging technologies like TSOA — which incorporates software applications on JTCW to support C2 operations — must work well with NOTM and other tactical communications systems.

"NOTM is the platform everyone will be focused on with the new EABO scenario," said Jonathan James, MC2SA's TSOA technical lead at NIWC Atlantic. "There won't be a tent with laptops. Marines will be dispersed with tablets. So ensuring the technologies are integrated is a top priority."

Capt. Wesley Sanders, NIWC Atlantic's commanding officer, and one of the DOD observers at the exercise, said Marines operating in EABOs directly support the U.S. Navy's ability to provide effective sea-controlled operations.

"At a national level, our Navy is called on to aggressively compete in shaping the security environment of the maritime domain by increasing our technological edge," he said. "The tools demonstrated during Island Marauder, particularly as they pertained to EABOs, helped fortify our capabilities in the littoral battlespace and support our Navy's mission of maintaining maritime superiority."

Eimers called Island Marauder 2019 an overall success in that it inspired serious debate and discussion among both Marine participants and observers.

"Technology has been a game-changer in modern warfare," he said. "You need to effectively use it, defend your use of it and successfully counter your enemy's use of it.

"Island Marauder gave Marines from lance corporal to seasoned field-grade officer a chance to give our engineers valuable feedback on these technologies," Eimers added. "It sparked meaningful conversations about not just what these technologies can do, but how to use them, how to improve them and how to keep their capabilities relevant in the future."

Rapid prototype development for warfighters

IWRP marks successful first year

By Michaela Judge
NIWC Atlantic Public Affairs

Since declaring full operational capability (FOC) in October 2018, the Information Warfare Research Project (IWRP) continues to surpass significant milestones designed to accelerate the delivery of technology to the warfighter.

The IWRP uses an alternative acquisition method, called an other transaction authority (OTA), to streamline acquisition processes, develop prototypes and rapidly provide advanced technologies to the fleet.

"IWRP is something we are very proud of and excited about — the engagement through this process with industry and the rapid capability we've been able to achieve for the entire NAVWAR enterprise and Navy is evident," said Peter C. Reddy, NIWC Atlantic executive director.

In the last 12 months, the project provided industry and government organizations more than 400 opportunities to collaborate on prototype projects, exceeded the fiscal year forecast with $35 million awarded in prototype ceiling and reduced the contracting award timeline by 80% compared to traditional contracting methods.

"When we started this journey a year ago, we didn't know where the program would go or the fruit it would bear," said Don Sallee, IWRP program manager, NIWC Atlantic. "Since few agencies have done what we are doing, even understanding what collaboration was going look like and what benefits it would provide was unknown."

Despite the initial uncertainty, the project now boasts a consortium of 439 companies — a number unmatched by similar projects — and through the OTA construct, awarded prototype opportunities with industry.

"NIWC Atlantic has really moved out in establishing this consortium to benefit our industry partners and the warfighter," said Michael Bachmann, IWRP executive committee chair. "In our particular consortium, the company makeup is almost 25% traditional and 75% non-traditional. Through this venue, industry partners are bringing transformational technologies that the warfighter actually needs."

Through IWRP, the agile OTA process takes industry's innovative ideas from concept, collaboration, proposal, demonstration, to prototype in rapid succession, with the opportunity to transition the technology into the fleet.

"There really is no other contracting vehicle that enables this — and it's a very powerful change that the Navy and other services are now employing," said Bachmann.

Though the number of prototype awards serves as key achievement for the project, Sallee said the increased collaboration with industry in the last year holds the greatest value for the continued success of the project.

"Our job is to give our Sailors and Marines — our service members — the best opportunity they can have, through technology, to win the fight and protect our freedoms," said Sallee. "The synergy and relationships we foster with industry through IWRP ensures we put the best possible solutions into the hands of our military members."

The Navy's Sea Warrior Program (PMW-240) within the Program Executive Office for Enterprise Information Systems (PEO EIS) is already seeing the benefits of IWRP for today's military members. A team from OPNAV N1 and PMW-240 has completed the first successful IWRP prototype called Authoritative Data Environment (ADE) 3.0, which aims to solve a major human resources (HR) challenge for Sailors.

"ADE 3.0 is the third generation of a single source of truth for human resources matters — things like your personal records, training records and dependent information, and it gets us to a server-less world," said Lt. Cmdr. Michael Pyne, OPNAV N1N6, platforms and infrastructure resource manager.

Pyne and Lt. Cmdr. Stevie Greenway, PMW-240 Sea Warrior Program assistant program manager, submitted a proposal to advance the Navy's current human resources database to a commercial cloud environment. Once launched, ADE 3.0 will allow a Sailor to update records in one location, rather than multiple, and have it reflect accurately across all HR platforms. Through the collaborative design of IWRP, Pyne and Greenway are seeing immediate cost and timesaving benefits.

"The IWRP has created an environment that allows a requirements officer — N1 — and an executive agent for execution — PMW-240 — to foster an environment where we could go from an idea to delivered code in eight months at a cost of $20 million cheaper than competing architecture," said Greenway.

In January 2019 IWRP awarded its first prototype for a new Low Altitude Range Communication System (LARCS) for the U.S. Marine Corps. NIWC Atlantic's LARCS project team found the collaborative, open communication with industry as the key to their continued success to finalize a groundbreaking solution for the Marines.

"When you write a standard federal acquisition regulation-based contract, you have to put down exactly what you want from a requirements standpoint," said Allen Hillman, NIWC Atlantic engineer. "But the OTA process allows you to submit the basic requirements of what you want, and then see what else industry can offer."

The LARCS prototype takes the Marine Corps analogue air-to-ground communications system and modernizes to a voice over internet protocol (VoIP) user environment with graphical user interfaces (GUI) to bridge gaps between different systems. The virtual communication system mirrors a scaled down version of an air traffic control tower, eliminates interference and enhances the connectivity to multiple radio systems.

"This version of LARCS is like going from a Volkswagen to a spaceship — it gives the warfighter so many more capabilities," said Hillman. "The open collaboration with industry to make modifications quickly is an incredible capability and a necessary function to deliver the technology our nation needs now."

Moving into fiscal year 20, the IWRP team isn't slowing down. In fact, they are expanding with projections of $50 to $60 million in prototype awards.

"With the ever-narrowing technological advantages of our adversaries, we have to work very hard to maintain our competitive advantage," said Reddy. "That competitive advantage comes from technological innovation coupled with the capabilities, fighting spirit and determination of the American warfighter."

Photos by Joe Bullinger

In the last year the IWRP has provided industry and government organizations more than 400 opportunities to collaborate on prototype projects. A recent IWRP Industry Day featuring IWRP Program Manager Don Sallee, above, and NIWC Atlantic Executive Director Peter C. Reddy, below, is one of the ways the team has increased engagement.

Photo provided

The proposed information warfare station (IWS) and centralized visualization wall (V-Wall) interface solution fuses and integrates various types of information — data, video, voice and more — to one location.

VWall: *Information Warfare Station and Visualization Wall will deliver Navy Information Warfare Afloat*

A NIWC Atlantic Information Warfare Research Project (IWRP) prototype in development will provide information warfare commanders (IWCs) a better visualization of battlespace awareness, assured command and control, and integrated fires at sea.

The information warfare station (IWS) and centralized visualization wall (V-Wall) interface will collect, integrate, communicate and manage fleet information warfare (IW) in a more efficient, effective and rapid manner, according to IWS Project Lead Charles Wade.

"The vast amounts of data that come to the IWC staff on decentralized monitors and displays can test their ability to review, analyze and manage it," said Wade. "This proposed solution fuses and integrates various types of information — data, video, voice and more — to one location."

The V-Wall, supported by a consolidated IWS capability, will provide the IWC an uninterrupted flow of all the information needed to give commanders the defined operational picture. It will also arm the IWC to make rapid, informed decisions to support the carrier strike group and enable the Joint Information Environment.

"The V-Wall and IWS will expand the information warfare advantage and maximize warfighter awareness as the pace and scope of information-related aspects of the modern battlefield increase," Wade said.

Wade, a former Navy communications officer (Chief Warrant Officer 3) who retired from USS Nimitz (CVN 68) in 2007, has worked on requirements and architecture for future ships and developed command, control, communications, computers and intelligence (C4I) acquisition documents for ships for the last 12 years. His active duty experience and his current vision of the operational construct gives him a unique insight into the needs of IWCs. He has been working on the V-Wall concept for a couple of years. The idea came from the U.S. Naval Information Forces (NAVIFOR) and strategy documents on visualization.

The need to develop advanced data display and visualization of the information environment and employ enhanced tools has been recognized. There has been no clear requirement, however, for these two tools to enter research and development, science and technology and prototype, leading to a product that can be integrated, installed and operationally verified with testing before being placed in an operational environment.

"Now is the time," Wade said. "The Navy is heading in the direction of communications automation, and the IWS and V-Wall will enable the information warfare platform decision-makers the ability to observe, orient, decide and act on what is needed."

He cited the use of Technology Investment Strategy improvements, which will provide significant gains to the future Navy by automating and integrating information technologies. This will increase the effectiveness of the information environment, which is the aggregate of individuals, organizations and systems that collect, process, disseminate or act on information.

The IWRP construct — which advances naval IW through rapid research, development and prototyping — offers a unique opportunity for Wade and NIWC Atlantic to address the V-Wall concept.

"Seven industry partners submitted white papers for technical evaluation. The first 12 months we will work on the proof of concept and present it," Wade said. NIWC Atlantic has provided a secure lab space for the team to produce a prototype. The team is analyzing the IWC-required operational capabilities and activities, and information exchange requirements in order to produce the proof of concept research report. They will then develop, produce and present a virtual simulation demonstration of the IWS and V-Wall.

Besides providing the IWC a single physical location to visualize the information environment and employ enhanced tools, the V-Wall will be scalable for differently sized warships. Wade's plans includes three V-Wall variants for force-, group- and unit-level vessels.

The Composite Warfare Commander and IWC decision-makers require the ability to act fast on the logistical information and data provided by their own ship networks and systems and from the digital environment off ship to make informed decisions. They need automated information sharing across combat, command and control, intelligence, surveillance and reconnaissance systems and electromagnetic (EM) spectrum operations that provide operational status and readiness. They need rapid extraction of operational, intelligence, meteorological/oceanographic, and EM spectrum and network health data whenever needed. They need improved computational capability, artificial intelligence and tools to enhance situational awareness and enable rapid modeling of alternate operational and tactical courses of action.

While the project is still looking for sponsorship, Wade wanted to start with a small, agile team.

"We wanted to build an 'A-Team' workforce that could do this as a rapid engineering project," he said. "From the research I've done, C4I and networks are already pumping out the information. It just needed to be tapped and displayed."

Wade explained that a lot of key software is already available to make the V-Wall a reality, in addition to the Consolidated Afloat Networks and Enterprise Services (CANES) backbone.

"Winning the 'information war' requires not only a pure understanding of existing information and data sharing capability needs, but also the ability to modernize our information technology (IT) hardware and software for the Future Surface Combatants Force," Wade said. "Under normal acquisition process timing, this could take 10 years at best — more likely 20 — before every ship in the fleet has one. Our goal is to deliver this capability to the fleet in five years.

"It is vital for the U.S. Navy to continue to provide the very best IT capabilities to our warfighters in order to sustain maritime superiority," Wade said.

- *Susan Bullinger,* Chronicle *Editor*

On Demand Manufacturing at NIWC Atlantic

Continued from page 7

share cybersecure data between sites on an enterprise-wide cloud network. This would allow point-to-point 3D printing from Charleston, enabling operators to push print on files in Virginia, Naples, Stuttgart and beyond, to eventually include shipboard and subsurface implementations.

"Digital Thread AM addresses all the issues with data sharing that would enable end-to-end product lifecycle management," said Heller. This year network engineer Jamie Garrett joined the ODM lab team of mechanical engineers Heller, Smith and Jeremy Dinda.

As the team uses the equipment more and AM technology matures, they are growing their menu of products and capabilities. "We are getting more experience making different products with a variety of materials. We're using different files and software, and collecting and sharing lessons learned," Heller said. They are also working with a group installing Consolidated Afloat Networks and Enterprise Services (CANES) across the fleet, with industry partners and with tenant commands on Joint Base Charleston — Naval Weapons Station.

Given the relatively low cost of AM equipment and the money and time saved using 3D-printed components, the ODM team is poised to move to the next level of repair and redesign of Navy components.

For Heller and the AM team, the rewards come from approaching a problem in a unique way. "We are not limited to traditional methods for making things. We can use this technology to come up with ingenious solutions that save space, weight, cost and time. These are the solutions we want to share with warfighters."

- *Susan Bullinger,* Chronicle *Editor*

NIWC Atlantic hosts second NR&DE Data Science & Analytics Workshop

By Diane Owens
NIWC Atlantic Public Affairs

NIWC Atlantic hosted its second Naval Research and Development Establishment (NR&DE) Data Science and Analytics workshop Nov. 5 – 7 at NIWC Atlantic headquarters in Charleston, South Carolina.

More than 240 Department of the Navy (DON) civilian and military professionals interested in data science attended the workshop to share information, identify key technology growth areas and gaps, and collaboratively plan for the future.

The primary goals of this year's workshop were to unify a common vision and shared effort aimed at enhancing the DON's data and analytics capabilities in the areas of warfighting, readiness and business operations.

NIWC Atlantic Commanding Officer Capt. Wesley Sanders opened the session, welcomed attendees and noted that the workshop draws data scientists from across the DON who provide significant data for decision-making. This collaborative gathering, he added, will help determine the direction of naval data science capabilities.

"Our data scientists securely capture, store, disseminate and curate accurate data from disparate data sources," Sanders said. "They work to replace outdated technology that keeps military leaders from seeing and considering critical data, and making suboptimal decisions."

He urged participants to focus on leadership and workforce perspectives to bring together sub communities in the data science field to collaborate in strategic and tactical directions to enhance accurate, timely decision-making.

"Your objective is to see things differently and to see data for what it is — an enabler to the workforce on ships, submarines and other platforms, for the Sailors themselves. Today's war depends on innovative uses of technology — not on the number of troops," Sanders noted. "The Chief of Naval Operations makes it clear what he expects from us, and this is the right time for this workshop to draw data scientists to collaborate, identify strengths and gaps, and work together to assure we have a path forward to meet the Navy's strategy."

Sasala

Thomas Sasala, designated the first DON Chief Data Officer in October 2019, served as keynote speaker. He described the drivers for a modern naval data environment and provided a high-level overview of the naval data management concept of operations and the proposed naval data architecture.

"Naval data management is centered on 12 information domains. The DON will structure data management around these information domains instead of organizational units, systems, programs of record or funding lines," said Sasala. "The DON data governance board (DGB) governs all naval data policies, regulations and guidance. Each domain will be managed by a data steward through the DGB, and decisions and policy will be made through the governance structure."

Sasala discussed a data hierarchy of needs, which is founded on the ability to make data visible. Moving upwards, the next tier consists of access to data by consumers, which is followed by the need for continuous cleaning and control. It culminates with exploitation of data. The DON strives to be at the pinnacle of the hierarchy exploiting data, but must start with addressing data visibility and accessibility.

> *"At NIWC Atlantic, our data scientists and engineers have a core purpose to revolutionize naval decision-making, tackling interesting and challenging problems regardless of the mission."*
>
> **– Robert Keisler**
> **SSTM for Data Science and Analytics**
> **NIWC Atlantic**

A DON-wide community of practice (COP) is being built around data management and data analytics.

"It's important to identify success stories and positive outcomes by championing successful projects through the COP," said Sasala. "We want to identify centers of excellence and have COP members interact physically and virtually. We must make immediate changes in the way we do business."

Philip Lee, DON Chief Data Office staff member, discussed the DON Implementation Plan of the Department of Defense (DOD) Data Strategy (I-Plan). The DOD Data Strategy, which sets the vision, guiding principles, goals and objectives to transform the DON into a data-driven organization, is expected to be signed by the end of November, followed by the release of the DON I-Plan in early 2020.

The DON I-Plan is separated into five lines of effort: set the foundation; evolve the workforce; position and protect data; build, optimize and operationalize the environment; and manage and govern.

"The I-Plan outlines the actions required to develop and maintain a successful data management and analytics-driven environment within the DON," said Lee. "Our team has been working with stakeholders across the DON to develop this plan and encourage you to participate."

Panelists from various naval warfare centers and agencies presented information about critical projects underway and moderators led audience discussions about a wide range of topics including: understanding current naval data science needs, the role of data science in participants' current positions, issues with data accessibility and governance, tools used to aggregate and share data, and existing naval data science lines of effort.

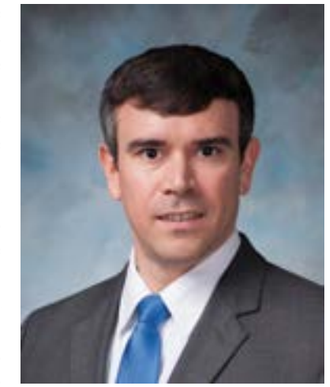
Bray

They also discussed advantages of having experienced data science employees with industry experience as well as bright, self-taught personnel. Panelists stressed the importance of having team members skilled in data story-telling — the ability to explain analytic results to high-level leaders.

William Bray, Deputy Assistant Secretary of the Navy for Research, Development, Test and Evaluation, addressed workshop participants via video teleconference and discussed his primary data science areas of responsibility: science and technology, prototyping, NR&DE priorities and systems engineering digital transformation testing and delivering systems.

Dr. Robert Parker, Deputy Program Executive Office for Command, Control, Communications, Computers and Intelligence for Technical Direction and Capability Integration, also briefed workshop participants.

"Data needs to be the backbone of everything we do in the fleet," said Parker.


Keisler

Throughout the workshop, audience members formed groups and completed data science projects at their respective agencies. Eighteen attendees displayed posters about projects.

Group members also talked about project gaps and briefed all workshop participants about primary outcomes from these discussions.

"A workshop like this is amazing because of the synergy," said Naval Air Systems (NAVAIR) Command data professional Karen Frech. "It was a great opportunity to discuss projects we're working on — and I can see we're really starting to become a force."

Robert Keisler, senior scientific technical manager for data science and analytics at NIWC Atlantic, participated in a workforce development panel discussion with leaders from NAVAIR and Naval Sea Systems Command. Keisler, director for a data science department with more than 250 members, discussed best practices for hiring, training and retention, stating the ability to give data scientists meaningful work as the number one retention issue.

"At NIWC Atlantic, our data scientists and engineers have a core purpose to revolutionize naval decision-making, tackling interesting and challenging problems regardless of the mission," said Keisler.

Dr. Lucas Overbey, science and technology lead for data science and analytics at NIWC Atlantic, described NR&DE data science and analytics road-mapping efforts to move the Navy forward by unifying a common vision and establishing a blueprint for the next three years, aligning with high-level DON implementation plans.

"This has been exciting and incredibly valuable. Connecting with DON data science professionals has helped me, and I've gotten a lot of valuable suggestions," said Sasala. "My office will try to help you with roadblocks you encounter."

The NR&DE includes scientists, engineers, mathematicians and technical personnel from Naval Warfare Centers, Systems Centers and the Naval Research Laboratory who conduct DON research, development, testing and evaluation. This establishment encompasses the technical resources required to explore, develop and field future naval warfighting capabilities such as laboratories, test facilities and test ranges.

Flexibility, development, benefits drive federal careers

Equipping employees for success

By Maison Piedfort
NIWC Atlantic Public Affairs

A common misconception about government work is that once you're in, you stop growing. One goes to industry to innovate; one gets into government to play it safe.

That's not the case at NIWC Atlantic. Ask its employees and they'll tell you they've never had more flexibility. Ask HR how many professional development programs we have and they'll run out of fingers. Ask local newspaper The Post & Courier where the best place to work in Charleston is and they'll tell you NIWC Atlantic — voted an employee favorite two years in a row.

First there's the STEM events; we'll start here. Say a young girl's favorite subject is math, but she's never heard of a woman making a career of it. Call her Sam. She attends our Girls' Day Out summer camp, where NIWC Atlantic employees tell her that women do math and science too.

Years pass. Sam gets good grades and grows an affinity for coding. Maybe she wants to serve her country but she doesn't want to enlist. She's a perfect candidate for our Student Internship Program, where she can attend college and work at NIWC Atlantic in the summers.

Say Sam learns about NIWC's employee benefits and professional development programs; she learns exactly how her coding work makes life safer for warfighters. She decides she won't get a better deal than this, won't make such a meaningful impact this early on in her career anywhere else, so accepts a full-time position at NIWC Atlantic after college.

Sam is hired as a New Professional (NP). In the New Professionals program, she gets a two-year professional development plan called a Master Development Plan, built with her supervisor, and the constant support of the NP community. She'll go to the brown bag lunch presentations that teach about home buying, investing and time management.

She'll get a mentor; they'll catch up and talk long-term career shop once a month. She'll make friends at the after-hours socials. Her graduation from the program will be bittersweet, but she'll be excited for what's next.

Sam loves going on SHOTS, or the Ship Highlights Orientation Tours. It's fascinating to see the coding work she's doing manifest into real working machinery on a ship. She realizes the work she's doing in a cubicle is touching the day-to-day lives of warfighters more than she knew.

Soon enough Sam finishes her Defense Acquisition Workforce Improvement Act (DAWIA) training. She asks her supervisor what's next. She knows the opportunities are out there and she wants to collect them all like notches on a belt. Her supervisor recommends Cyber Education & Certification Readiness Facility (CERF) training, an in-house lab at NIWC that provides fast-paced, hands-on, training on

cyber, networks, routing and operating systems for job enhancement and to prepare for various IT certification exams. She studies hard during class and after. She passes the test for Cisco Certified Network Associate (CCNA) certification on the first try.

Now that Sam's adept at networks, she qualifies for a rotational opportunity at NIWC Pacific in San Diego. Her supervisor tells her she'd be perfect for it, so she applies. She's accepted and is excited to step outside her regular work role for a while to try something new. Just a week in and she's already thinking about how she can use what she's learned to take back to her regular job.

Eventually she gets involved in STEM events like FIRST LEGO League, where she gets to coach a team of middle schoolers on how to build a robot to compete regionally, then nationally. One of the kids on her team wants to write code when he grows up. Sam tells him NIWC Atlantic is the perfect place to do it.

Sam's favorite STEM event is Girls' Day Out, that very same summer camp that encouraged her to follow her passion in the first place. She gets to tell young girls that they are smart and capable and that they can be mathematicians or scientists, just like the team of women who wrote the code that sent us to the moon.

As soon as Sam pays off her student loans, she revisits her dream of getting her Master's. In passing she mentions to a colleague that she'd love to go back to school but doesn't want to go back into debt. He says, "Do you know about the Tuition Assistance Program?" The Tuition Assistance Program, he tells her, can pay for or reimburse her for schooling relevant to her work duties. Sam applies and is accepted. She goes back to school while working and gets her Master's two years later.

Now Sam is 40. Originally, the plan was to stay at NIWC Atlantic for two years. That was 18 years ago. She's met her spouse here. She's had kids. The more she planned her life, the more she plotted the professional advancements she wanted to make — the more she realized that it could all be done in Charleston, South Carolina at NIWC Atlantic.

The command nurtured her when she was a New Professional, gave her everything she needed to set her career off on a heightened path. They gave her all the training she asked for, whether it directly related to coding or not. They sent her back to school when she was hungry for more. Why go anywhere else when she could stay where she was and still grow in all directions?

This is how things work at NIWC Atlantic. We have goals, professional goals an outsider might not think fit into a government path — but they do. If you want to do something, NIWC wants to give you the tools you need to do it. This is how NIWC Atlantic serves its employees.

First, our long list of professional development programs motivate smart people to work here. Then it gets them to stay. Then it gets them to ask themselves, "While I'm here, how can I grow?" We encourage employees to grow, personally and professionally, because we know knowledge and skill gained directly improves our ability to accomplish our mission. This is how we serve the warfighter.

Sam chooses to stay, others choose to leave. We want them to stay, but at least we know that if they leave, we are sending smart, capable professionals back out into the workforce. We want them leaving better than they came in, even more capable to do the job that comes next. This is how we serve our community. We are a growth machine.

When we serve the employee, who serves the warfighter, who serves the country and our communities at large, we make everything safer for everyone. When we are safe and have access to resources, we build the best version of our careers possible. When we are like Sam, who goes to work every day thinking of the warfighter, with service on her mind and the tools she needs in her hands, with her own goals lined up with NIWC Atlantic's — that's how we win the information war.

Tech Bridge in Charleston will accelerate innovation

By Michaela Judge
NIWC Atlantic Public Affairs

Assistant Secretary of the Navy for Research, Development and Acquisition James Geurts recently announced the creation of the Palmetto Tech Bridge in Charleston under the coordination of NIWC Atlantic.

"Tech Bridges are designed to capture the culture of innovation in key locations across our nation," Geurts said. "This endeavor is a combined effort between the Office of Naval Research and the Navy's Systems Commands to connect, reinforce and sustain acceleration ecosystems to enable key partnerships. Tech Bridges will establish off-base, collaborative spaces that will bring together all parts of our workforce with startups, small businesses, traditional companies and academia."

The Palmetto Tech Bridge will be the sixth bridge established under the Naval Agility Office (NavalX) office since Sept. 3. The initial five locations are Newport, Rhode Island; Keyport, Washington; San Diego, California; Orlando, Florida; and Crane, Indiana.

"Earlier this year, we stood up the first five locations to facilitate rapid adoption of proven agility-enhancing methods across the Department of Navy," Geurts said. "And today, I'm proud that NIWC in collaboration with NavalX has furthered our agility efforts by creating this sixth regional 'Tech Bridge' in South Carolina. This is a positive step to better connect the DON and the private sector and enable the DoN to achieve its goal of agility at scale."

"Drawing on the talents from across industry, NIWC Atlantic will focus and facilitate this considerable innovative force on developing dual-use solutions to meet both national defense needs and enhance the region's economic strength with innovative commercial products," said Michael Merriken, Palmetto Tech Bridge director.

Each Tech Bridge is designed to facilitate project efforts focused on solving hard problems and technology challenges identified by Fleet and the DoN workforce. Once up-and-running, the Palmetto Tech Bridge will collaborate with start-ups, academia, corporations, small businesses, non-profits and private capital to identify dual-use solutions for both industry and the warfighter.

"We're excited that NIWC Atlantic was chosen to lead this critical innovation endeavor through the Palmetto Tech Bridge," said Capt. Wesley Sanders, NIWC Atlantic commanding officer. "This bridge will play a crucial role in executing the necessary work to not only improve our pivot speed but also provide the at-scale agility required by the Department of Navy."

The Tech Bridges operate on a "franchise" model that will allow each region to develop their own model to connect to their unique innovation ecosystem. Merriken's team will spend the next month identifying regular meeting spaces to host Palmetto Tech Bridge events for government and industry partners in the southeast region to collaborate on new capabilities.

For more information on NavalX and Tech Bridges visit *www.secnav.navy.mil/agility.*

Photos by Jerry Sekerak

Navy's 244th birthday celebrated across the sea and across NIWC Atlantic

Navy history and heritage was celebrated Oct. 13, the 244th anniversary of the the day Congress established the Navy in 1775.

Sailors and officers from NIWC Atlantic's Hampton Roads detachment celebrated with a ceremonial striking of eight plus one bells by LCS (SW/AW) Ebony Thomas, above, and a cake cutting by the detachment's youngest Sailor (YN3 Ashton Chambers) and senior officer present (Cmdr. David Eriksen). The center's four new chief petty officers sang "Anchors Aweigh." These festivities were broadcast via VTC across the command.

NIWC Atlantic employees stationed at NSA Naples, Italy were among those celebrating the Navy's 244th birthday at a Naval Support Activity Naples-hosted birthday ball Oct. 26.

Pictured below at left, from left, are Gerald Balderrama, 50G00 engineer; Brooks Osteen, 50G00 Engineer; Monica Norman 50G00 Engineer; Guillermo Leiva 50G00 Engineer; George Willman, 40G00 Competency Lead; and Cmdr. Chris Clotfelter, officer in charge of NIWC Atlantic NAVEUR/NAVAF detachment.

The theme of this year's Navy birthday, "No Higher Honor," is a quote from Lt. Cmdr. Robert Copeland, commanding officer of World War II destroyer USS Samuel B. Roberts (DE-413).

Adm. James G. Foggo III, Commander, U.S Naval Forces Europe - Africa, and Commander, Allied Joint Force Command Naples, spoke at the Naples ball about the history of the Navy and its close ties to Italy.

Photo provided

Photos by Joe Bullinger

Marines mark Corps' birthday November 10

NIWC Atlantic celebrated the U.S. Marine Corps' 244th Birthday with a ceremonies in Charleston and Hampton Roads, Virginia.

Former Marines who still support the warfighter as NIWC Atlantic federal civilians and industry parters congregated and stood in ranks in front of Bldg. 198 as Capt. Wesley Sanders, NIWC Atlantic commanding officer, spoke to the group.

"I take great pride in the critical information warfare solutions NIWC Atlantic provides to today's Marines," Sanders said. "Placed in the hands of Marines, our systems enable the command of forces that creates options and decision space for our nation's 'away team.'"

Sanders then introduced guest speaker Marine Corps Col. Chuck Dunn, commanding officer of the Navy Reserve Officer Training Corps unit at The Citadel and professor of naval science.

At NIWC Atlantic's Hampton Roads detachment Marines and officers took part in a ceremony emceed by Staff Sgt. Cody Shambaugh, Aviation Logistics Information Management System Fleet Support Lead, Code 41300. Originating from the Patriots Room in Bldg. Z-133 on Naval Station Norfolk, the celebration featured a viewing of the Marine Corps Commandant's birthday message, playing of the Marine Corps hymn and a cake cutting for Hampton Roads detachment's youngest (Staff Sgt. Becka Lofland) and oldest (Juan Navvarete) Marines.

Photo by Jerry Sekerak

Collins receives Women of Color STEM award

By Maison Piedfort
NIWC Atlantic Public Affairs

A NIWC Atlantic computer scientist received the Women of Color STEM Conference Award for managerial leadership Oct. 4 in Detroit, Michigan.

Betty Collins was named a Technology All-Star for her work at NIWC Atlantic and her impact to the Navy and the warfighter. She and other Technology Rising Stars will be honored during at an awards gala at the 24th annual Women of Color Science, Technology, Engineering and Math (STEM) Conference.

"I knew I was going up against some innovative, creative and talented candidates, so I never thought I had a chance of winning," said Collins. "When I found out I had won, I was stunned, yet humbled."

The award recognizes professionals whose accomplishments in leading and managing a laboratory, company, or significant part of a technology enterprise make them stand outs in the STEM fields.

"Ms. Collins has a deep-seated commitment to our Marine Corps and Navy warfighters, making her life's mission to ensure cybersecurity support is always outstanding," said Michael Morris, NIWC Atlantic cybersecurity engineer and Collins's supervisor. "She exemplifies the spirit of the Women of Color managerial leadership award."

Photo by Joe Bullinger

Betty Collins, NIWC Atlantic computer scientist and Women of Color STEM Conference Award winner for managerial leadership, looks over schematics in Bldg. 1602.

Collins joined NIWC Atlantic more than 10 years ago after a 20-year career in the U.S. Army. She has extensive experience leading projects in cryptography and in the assessment and accreditation of information systems for the Department of the Navy. She supervises 35 government civilian employees who provide cybersecurity support to the Marine Corps.

Continued on next page

Jackson, Rutherford present powerful awareness program

NIWC Atlantic's Alex Jackson speaks while Matt Rutherford listens during an Oct. 31 Disability Awareness Month program in which the two men shared videos, photos and stories illustrating how they grew up and their common dedication to overcoming challenges. Their presentation sent a powerful message about how people with disabilities are perceived, and small ways people can be more inclusive in thought and action.

Photo by Joe Bullinger

Hodges honored with NSA award

By Heather Rutherford
NIWC Atlantic Public Affairs

NIWC Atlantic's cybersecurity service provider (CSSP) director received the 2018 National Security Agency (NSA) Frank B. Rowlett Award for Individual Achievement during a ceremony held Sept. 10 at NSA Headquarters in Fort Meade, Maryland.

Justin Hodges, who wears dual hats as director of NIWC Atlantic's CSSP and chief of Defense Health Agency (DHA) Cyber Operations Center (CyOC), earned the award for his numerous achievements in both positions.

Named for cryptographic pioneer Frank Byron Rowlett, the annual award recognizes individuals within the federal government who have excelled in the field of cybersecurity by making significant contributions to improve national information systems security and operational readiness.

Under Hodges' leadership, CSSP made vital improvements to the cybersecurity posture of the Department of Defense and the nation by protecting and defending systems and networks that transmit critical healthcare data used in the treatment of warfighters and their beneficiaries.

Hodges was instrumental in standing up and achieving full operational capability for the DHA CyOC in 2018. As DHA CyOC chief, he provides an integrated management capability to DHA for all cyber tasks and meets increased cyber operational tempo for defensive cyberspace operations across DHA's cyber terrain.

"We are extremely proud of Justin for receiving this prestigious award. It reflects the level of excellence in cybersecurity that he and his team continually strive to achieve," said Defense Health Information Technology Supervisory Division Head Cal Stephens, who attended the ceremony.

Also in attendance were DHA Chief Information Officer and Deputy Assistant Director Thomas Patrick "Pat" Flanders and NIWC Atlantic leadership, including Mission Assurance Division Deputy Joseph Henline and Shore Command and Control, Intelligence, Surveillance and Reconnaissance and Integration Department Head Bruce Carter.

Hodges

"It was an honor and a privilege to witness Justin Hodges receive the Frank B. Rowlett Individual Achievement award this year. Justin represents NIWC Atlantic's cyber engineering and leadership excellence serving our Navy and nation," said Carter. "This award has very strong competition from across the federal government — to be nominated as a finalist is remarkable, but to win is absolutely awesome."

NSA Deputy Director George C. Barnes, NSA Director of Cybersecurity Anne Neuberger and Tom Rowlett, son of Frank B. Rowlett, presented the award to Hodges as colleagues and family members looked on.

"There's an old saying that goes something like: 'It's amazing what you can do if you don't care who gets the credit,'" said Hodges. "While it's a great personal honor to receive this award, the credit goes to the whole NIWC Atlantic CSSP and DHA CyOC because we couldn't have accomplished anything without the team and the environment we've collectively created."

In addition to the Frank B. Rowlett Trophy for Individual Achievement, Hodges also received a congratulatory letter from NSA Director and Central Security Service Chief U.S. Army General Paul M. Nakasone thanking him for his cyber leadership and continual positioning to counter emerging threats in cybersecurity operations.

Collins award

Continued from previous page

"I came onboard not looking for what NIWC Atlantic could do for me, but for what I could do to contribute to the organization and its mission," said Collins.

In 2018 Collins was selected as the lead information systems security manager in support of the telephone management system in Charleston, South Carolina, and in Portsmouth, Virginia, providing broad telephone service related to the day-to-day operations of NIWC Atlantic.

Outside of her regular work duties, Collins serves as a mentor for NIWC Atlantic's annual Girl's Day Out program, an event that encourages young girls to enter STEM careers. She also leads recruiting events at several colleges, including historically black colleges and universities.

"She brings passion to everything she does and she passes on that commitment to excellence to her team," said Morris. "She represents the best of NIWC Atlantic."

'Marines 101' gives contextual understanding

MaCOA aligns division to the Corps

By Steve Ghiringhelli
NIWC Atlantic Public Affairs

New professionals and old-timers alike from a Naval Information Warfare Center (NIWC) Atlantic intelligence division are asking questions during newly formed workshops designed to help them understand and better anticipate Marines' needs.

Toby Straight, Expeditionary Intelligence Solutions (EIS) Division head at NIWC Atlantic's Expeditionary Warfare (ExW) Department, launched Marine Corps Orientation and Alignment (MaCOA) training in November after internal questions surfaced in his division about its largest customer — the Marines.

"In addition to explaining structure, organization and a whole lexicon of acronyms that seems to grow by the day, we wanted to ensure our work is aligning with the Navy's and Marine Corps' latest push for naval integration," said Straight, a Marine veteran and former Navy and Marine Corps Intelligence Training Center instructor.

MaCOA training functions as a sort of Marine Corps 101, explaining Marine culture, chain of command and force structure from fire teams, squads and platoons to companies, battalions and regiments.

Whether a recent college graduate or a veteran engineer, attendees check their assumptions at the door and come ready to learn everything from the basics to the latest nuances about the nation's most elite warfighters.

"The Marines are our primary customer, so we have a responsibility to ask questions," said Lindsay Sakran, an EIS project manager supervisor who has implemented similar Marine Corps 101 workshops in her section in the past. "Whether that's to explain the autonomy of a Marine rifleman or break down the implications of recent high-level changes in the Marine Corps, everything affects how we think about and accomplish our work."

Straight said one immediate outgrowth of MaCOA training is digging deeper into a decree released in July by Gen. David Berger, the new U.S. Marine Corps commandant. Called the Commandant's Planning Guidance (CPG), the 23-page document lays out a strategic but urgent track for the Marines, a sort of road map of where they are going and why.

Topping the list on the CPG is a call for greater "naval integration."

"Marines were always known as an amphibious force trained for amphibious assault operations," Straight said. "The CPG, in some ways, returns Marines to those roots."

Bolstering the CPG, Chief of Naval Operations (CNO) Adm. Mike Gilday released a fragmentary order (FRAGO) in December prioritizing integration with the Marine Corps. The FRAGO distills key portions of last year's comprehensive Design for Maintaining Maritime Superiority 2.0 into less than eight pages.

"Together with the United States Marine Corps, our Navy is the bedrock of Integrated American Naval Power," Gilday stated on page one.

Straight said that for Marines, the CPG is a call to action, a promise for greater naval orientation at boot camps, schools and commands across the fleet force.

"For us, as a Navy command," he said, "the CNO's new FRAGO means helping Marines integrate."

As mindsets about the Marine Corps' future change, MaCOA classes seek to inculcate something new. Participation is encouraged at all levels. Even Marine veterans with years of experience learn new things or tag-team responses to questions from the group.

"The organizational charts and documentation explain only so much," said Carel Peacock, EIS Division chief engineer. "Exchanging ideas in a workshop setting while Marine veterans explain what things are actually like at the platoon level really brings discussions about capabilities to life."

Across the board, whether an engineer or a contracting specialist, everyone supporting the EIS Division will benefit from the new MaCOA training, especially with the new push for better interoperability between the Navy and Marine Corps, said Chris Sargent, an eight-year Navy veteran who leads the department's Terrestrial Collections and Identity Operations program.

"It's so important to have a contextual relationship between our daily operations here and how they will affect actual Marines and Sailors deployed around the world," Sargent said. "MaCOA training boosts proficiency and enhances the acquisition workforce we continue to develop."

Sargent said that in addition to prioritizing the development of technologies in robotics, quantum computing and artificial intelligence, the CPG and CNO FRAGO advocate for emerging components of naval warfare like expeditionary advanced base operations (EABO) and littoral operations in a contested environment (LOCE).

Floyd Usry, a retired Marine colonel who serves as the ExW Department's customer advocate and an adviser to MaCOA trainers, said that the CPG calls for the forward deployment of Marines to compete against the malign activities of China, Russia, Iran and their proxies, which places a heavy demand on the nation's naval services.

"One of our primary jobs right now is to see everything through the lens of naval integration," he said. "Certain emerging capabilities will quickly become more important than past ones, particularly in the Indo-Pacific region.

Photo by Joe Bullinger

Toby Straight, Expeditionary Intelligence Solutions (EIS) Division head at NIWC Atlantic's Expeditionary Warfare Department, gives MaCOA training to division personnel in Bldg. 198 in Charleston. The class explains Marine culture, chain of command and force structure while also delving into high-level guidance from military leaders.

"MaCOA, the CPG, the CNO's new order or anything else that helps us appreciate the world's shifting threat landscape will help us better support Marines," Usry added.

Lisa Triplett, an EIS project lead who joined NIWC Atlantic about a year ago, said MaCOA training helped her understand Marine Corps history, where Marines are now and how her work impacts Marines and their missions.

"This training has been invaluable to me," she said, "especially in helping me process concepts like EABO, LOCE and distributed maritime operations."

In large part, translating concepts, conditions and environments into tactile capabilities is what the EIS Division has been doing for years.

Sakran said success at every stage of product development comes from being well informed and understanding Marines at both the ground and strategic levels.

"We hear something like 'shorten the kill chain,' but need to grasp what exactly shortening the steps for intelligence to pass down really means," she said. "We have to be thinking about that lance corporal making life and death decisions at the fire team or squad level."

During one workshop, Straight explained that Marines with a full pack and a rifle don't have time to be on a laptop or pull out a tablet to access intelligence.

"If they focus their eyes somewhere other than on their environment, they will lose their tactical edge," he said. "So we have to figure out how to get critical information down to that lowest level without distracting them."

During another discussion, Straight said why waste one of the four Marines in a fire team to guard a rear perimeter.

"Maybe we can leverage technology and drop a small device on the ground with a motion detector that sends haptic alerts to a smart watch," he said.

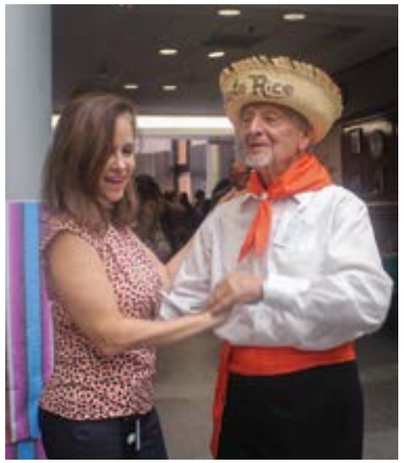
At the command level, Peter C. Reddy, NIWC Atlantic executive director, already leads Marine Corps orientation for new hires during the onboarding process. But with the ExW Department receiving approximately 90% of the entire command's work from the Marine Corps, offering Marine familiarization training not only improves the department's products but also its people.

"Developing our workforce means being intentional with our time," Reddy said. "This new training initiative demonstrates strong and strategic leadership, building an enduring bridge between engineering innovation and the Marine rifleman in harm's way.

"The latest CPG signals a seismic shift in Marine Corps priorities; the CNO's FRAGO reinforces it," added Reddy, also a retired Marine colonel. "In increasing our competence and advancing effective ideas, MaCOA training ultimately honors the faith our customers place in us."

Looking to the future, Straight said he is pleased with the feedback on MaCOA so far and hopes the training will become a part of his division's monthly drumbeat.

"I was in the Marines for 10 years, and many others here served in the military," he said. "Yet, even with those backgrounds, opportunities to learn will always present themselves, particularly as the implications of the CPG continue to be fleshed out."



Photos by Joe Bullinger

Hispanic/Latino event features culture, cuisine

NIWC Atlantic recently hosted Hispanic Heritage Month events to highlight the culture, traditions, history and heritage of American citizens whose ancestors came from Spain, Mexico, the Caribbean, and Central and South America.

In Charleston the celebration started with members of the Hispanic Heritage Month Team wearing traditional outfits and greeting and dancing with employees entering the atrium. Later in the morning David Vela, deputy director the the National Park Service, top right, was guest speaker. Vela, who manages more than 310,000 acres of park lands, delivered an inspiring message on diversity and inclusion.

The New Orleans office hosted three champions of diversity efforts who spoke about how Hispanics and Latinos have enhanced our national character. At both the Charleston and New Orleans events, NIWC Atlantic employees explored displays of artifacts from Hispanic and Latino cultures and tasted samplings of Latin American cuisine.

In Charleston, a guacamole and salsa competition gave employees a chance to submit their own creative take on two of the most prevalent Hispanic appetizers. Contestants and winners were Carlos Rios (guacamole and salsa runner up), Luis Carvajal, (salsa runner up), Toni Montgomery and Jim Gregory (guacamole), Michael Kent (salsa winner) and Tim Manning (guacamole winner).

Photos by Joe Bullinger

Women's suffrage struggles reenacted

The Executive Diversity Council Women of the Workforce (WoW) Women's Action Team sponsored a Women's Equality Day observance at NIWC Atlantic Aug. 27. Held in the Bldg. 3147 atrium, the event was broadcast to all sites.

The observance celebrated the Women's Suffrage Movement, which led to women officially receiving the right to vote August 26, 1920. This was nearly 141 years after the initial rally cry by Abigail Adams in a letter to her husband John in which she reminded, " Do not forget the ladies," advocating for women's equal treatment under the law while he worked at the Constitutional Convention in Philadephia. He mocked her request in a return letter.

A Women's Suffrage mock rally re-enactment featured audience participation and Sherri Anderson in a lively debate of issues of the time.

The event ended with participants falling in line and chanting, "Deeds Not Words."

Above, Nina Campbell tells kids about this year's FIRST Lego League competition against a backdrop of sea life at the aquarium. Opposite, students check out the interactive exhibits at the aquarium and start making Lego creations.

FLL 2019/20 kicks off aquarium

By Maison Piedfort
NIWC Atlantic Public Affairs

NIWC Atlantic teamed up with local businesses to kick off of the annual LEGO® League robotics competition Sept. 12 at the South Carolina Aquarium.

The global competition, hosted by For Inspiration & Recognition of Science & Technology (FIRST), is designed to pique the interest of elementary, middle and high school students in the science, technology, engineering and math (STEM) fields.

"I hope the students see that learning can be fun, and that what they're learning can be applied to careers," said Tonya Haman, NIWC Atlantic STEM outreach coordinator and robotics lead for the command.

NIWC Atlantic employees like Nina Campbell, information systems security manager for Marine Corps projects, lead teams as robotics coaches.

"What I hope the students get out of tonight is that they see the missions, get motivated and get creative ideas about how they want to approach the competition," said Campbell, robotics coach for Fort Dorchester Elementary School's The Gator Bots. "I'm hoping this event will get them excited about robotics design."

Each year the FIRST LEGO League (FLL) releases a challenge based on a real-world scientific topic. Teams of up to 10 children, with at least two adult coaches, participate in the challenge by programming an autonomous robot to score points on a themed playing field and developing solutions to problems they encounter along the way, all the while using FIRST's core values.

The competition core values for this year are Coopertition® and Gracious Professionalism®.

"Coopertition combines the concepts of cooperation and competition," according to the FIRST website. "Cooperation is founded on the philosophy that teams can (and should!) cooperate with each other even as they compete."

Gracious Professionalism, the website says, is the idea that teams compete against challenges but appreciate and treat each other with respect.

The kickoff event covered topics like How to Engage an Expert, Process of Developing Your Topic and a scavenger hunt.

"I like robotics because I can hang out with my friends while doing it," said Aiden, eleventh grader from James Island Charter High School. Last season, Aiden's team built a robot that could pick a ball up from the ground and move it around a grid.

This initial portion of the FLL season runs from September to November. Qualifying teams from regional competitions have the opportunity to proceed to national and then international competitions in the new year.

Photos by Joe Bullinger

FLL teams compete, advance to regionals

NIWC Atlantic employees mentored all 24 teams participating in a FIRST Lego League Robotics qualifier event at River Oaks Elementary School recently. Seven teams advanced to the regional event at Cane Bay High School.

The FIRST Lego League challenges kids to think like scientists and engineers, and with the help of NIWC Atlantic volunteers and mentors, to build, program and test an autonomous robot from Lego materials.

At the robotics competitions the kids compete against other teams as their robots accomplish specific tasks while maneuvering through an obstacle course.

Photos by Joe Bullinger

The objective is to make the youngers enthusiastic about science and technology, and to encourage them to solve complex tasks in a creative way. Elementary kids interested in Lego league robotics can continue with teams through middle school and high school, with activities becoming increasing challenging.

The teams also choose and solve a real world problem each season. This year's challenge: What if you could build a better world? Where would you begin? Students observed how cities and buildings grow, thrive and change, and then created new, innovative solutions to help shape an optimal future, using our environment and modern-day tools and technology to make lasting improvements.

NAVWAR Executive Director Pat Sullivan praised the entire NAVWAR team for engaging with students through Lego robotics to encourage them to pursue STEM careers. "Legos by themselves are not very exciting, but when you put them together, things start to get interesting. Limits on what is possible lessen with each Lego, each new idea, each new technical breakthrough," Sullivan said. "It is the ideas of today's youth, the ideas of the students competing in these competitions that will develop those breakthrough technologies, building a better future for our Navy and our nation."

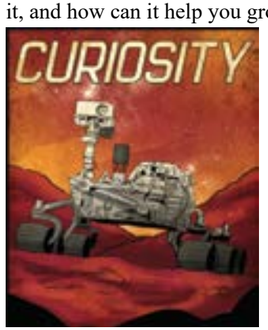
Empower yourself with curiosity

By Zaid Yacu
Electronics Engineer

Editor's Note: This article is originated from a speech Yacu gave at NIWC Atlantic's Toastmaster's Club.

As a young teen in the mid '70s, I much anticipated each episode of the science-fiction TV show Star Trek. The show was about the Enterprise spaceship carrying men and women from planet Earth to travel to unknown worlds, to explore new civilizations and "to boldly go where no man has gone before." In 2011, NASA launched a space rover named Curiosity to explore the red planet Mars. Why do you think they called it Curiosity?

What is curiosity? How and why you should use more of it, and how can it help you grow and empower you?



Curiosity is a strong desire, urge, craving or eagerness to know or learn something interesting. Curiosity is synonymous with inquisitiveness, interest, inquiry and nosiness.

Unlike machines and robots, human beings are born curious. This is why kids ask hundreds of questions every day. They want to know everything because they are in awe and wonder of our world. They continuously ask why, where, what, when, how and who. "Why is the sky blue?" "How do clouds form?" "Where do clouds get their water from?" As kids grow to become young adults, they ask fewer questions because our society and culture stifle their curiosity. Few young adults continue to ask questions. Those who do end up becoming scientists, engineers and astronomers.

Albert Einstein said, "I have no special talent. I am only passionately curious." He also said "The important thing is not to stop questioning."

We are very fortunate to live in the age of information and the internet. You can learn about anything you are interested in. Through the use of artificial intelligence and profiling techniques, an overload of information that uniquely interests you is being pushed at you every second. Take advantage of that and learn something new and gain good and useful knowledge.

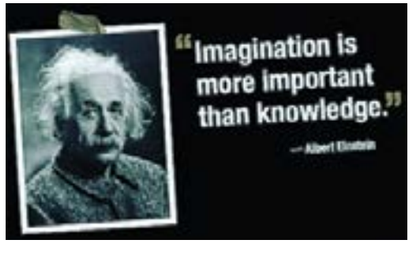
Your brain is affected when something that interests you sparks your curiosity. When you are curious, your brain craves information. You have heard the saying, "An inquiring mind wants to know." Curiosity haunts your brain to want and seek more information. The information sought is the reward to your wanting brain. When the brain receives the information it wants it releases dopamine, which is responsible for the happiness and pleasures we feel. This is why curious people are for the most part happy people.

Curiosity helps us remember things better. Scientific research has shown that your brain remembers and learns better when it is highly curious. Curiosity causes the brain's memory to save information.

Curious people have a growth mindset. Curiosity gets you ahead in life. It propels you forward. It pushes the limits and boundaries you have placed on yourself. It will take you to new places. It will motivate what you want to learn. Curiosity doesn't accept the status quo and routines. It will cause you to take on risks and new challenges if only you loosen your imagination and think outside the box. Find new and improved ways to do things and solve problems. Curious people don't get bored; they always have something to do or learn about.

Curiosity can empower you further if you can apply knowledge you gained in one area of life to another area of life. Like when putting a puzzle together, you will see a bigger picture if you can connect the knowledge you have gained in different areas. In math we learn that the sum of the parts equals the whole; however Greek Philosopher Aristotle said that the whole is bigger than the sum of its parts. He meant that the whole is better because the individual parts combined add a different quality that is not found in any individual part.

In conclusion, be like the Enterprise space ship and like Curiosity, the space rover. Dig deep, explore and search for new and known knowledge areas. Like Einestein, develop a passionate desire to seek and be interested in new ideas and concepts. Keep asking lots of questions. Apply gained knowledge in one area to other areas of life. Make connections of different knowledge areas and you will see a fuller picture.



Curiosity will cause you to learn, grow, be happy and be empowered.

Cunningham visits NIWC Atlantic

Photos by Joe Bullinger

U.S. Representative Joe Cunningham listens as NIWC Atlantic Chief Engineer Erick Fry, left, makes a point during a command briefing in the executive conference room Oct. 3. The freshman Congressman representing the 1st District of South Carolina visited NIWC Atlantic as part of an orientation visit that included tours on board Joint Base Charleston and Naval Weapons Station commands, including the Naval Nuclear Power Training Unit and Naval Nuclear Power Training Command. Below, NIWC Atlantic leadership was on hand to answer questions from the Congressman.

Photos by Joe Bullinger

MARCORLOGCOM CG Shrader visits NIWC Atlantic

Marine Corps Maj. Gen. Joseph Shrader, Commanding General of the Marine Corps Logistics Command (MARCORLOGCOM), speaks to assembled employees at the Vehicle Integration Facility during a visit to NIWC Atlantic Sept. 26. While in Charleston the general also visited the Mine Resistant Ambush Protected (MRAP) Egress Facility and the Vehicle Maintenance and Operationa Support Facility. After speaking to employees and celebrating an MRAP reset, the general briefed NIWC Atlantic leadership and the Leadership Council. At right, Shrader and Sgt. Maj. Michael J. Rowan of MARCORLOGCOM are welcomed upon their arrival at the quarterdeck of the main engineering center by then-Acting Executive Director Peter C. Reddy. MARCORLOGCOM provides globally responsive ground equipment inventory control and integrated operational-level logistics capabilities in order to maximize Marine Corps materiel readiness and sustainment.

Photos by Joe Bullinger

Reynolds briefed on NIWC Atlantic innovation, expeditionary initiatives

Marine Lt. Gen. Lori E. Reynolds, Deputy Commandant for Information, chats with NIWC Atlantic leaders during a Sept. 25 visit to the center. Hosted by then-Acting Executive Director Peter C. Reddy, the general learned about NIWC Atlantic's efforts involving Naval Innovation in the Information Environment and Concept-Linked Prototyping for the Marine Corps. Expeditionary Warfare Department leaders briefed her on Expeditionary Intelligence Solutions, Expeditionary Enterprise Systems & Services, Marine Air-Ground Task Force (MAGTF) C3 Solutions and Land Systems Integration. Only the third woman to earn the rank of lieutenant general in the Marine Corps, Reynolds has commanded at every rank. She was previously commander of the Marine Corps Forces Cyberspace Command. Her current position of deputy commandant for information was established by the Marines in 2017 to aligning all information-related capabilities, including cyber, signals intelligence and electronic warfare, under a single entity. As a general officer she commanded Marine Corps Recruit Depot Parris Island/Eastern Recruiting Region and was the Principal Deputy to the Deputy Assistant Secretary of Defense South and Southeast Asia in OSD Policy.

They're creepy & they're kooky...

Photo by Michaela Judge

... Mysterious & spooky; they're all together ooky; the Addams family ... a.k.a. members of the Corporate Communications and Public Affairs (8.5) team. They dressed up on Halloween as characters of the fictional household created by American cartoonist Charles Addams.

Posing at right, clockwise from left, are Grandmama (Wendy Jamieson), Wednesday (Maison Piedfort), Lurch (Joe Bullinger), Uncle Fester (Lonnie Cowart), "Black Widow" Debbie Jellinsky (Meredith Hagen), Pugsley (Steve Ghiringhelli), Morticia (Kris Patterson), Cousin It I (Chelsie Taddonio) and Cousin It II (Alex Jackson).

The fun was part of NIWC Atlantic's Spirit Week Oct. 28 through Nov. 1, which also included Pajama Day; Think Pink for Breast Cancer Awareness Month; red, white and blue for Patriot Day and Team Day — a chance for employees to show their team colors.

Thanks for the memories

As I end a 38-year federal civil service career, I want to thank everyone at NIWC Atlantic who has allowed us to tell their stories of success in the pages of this magazine for the last 14 years.

It has been an honor to be a part of this great organization that is delivering information warfare solutions that are saving the lives of warfighters around the world. NIWC Atlantic is a special place with special people who also give generously of their time to volunteer in our communities and encourage STEM study to strengthen the skills of the future NIWC Atlantic workforce.

I will always treasure my time as part of the awesome NIWC Atlantic Corporate Communications and Public Affairs team, and I look forward to reading future success stories from the comfort of my recliner.

I hope you'll continue to read current and back issues of *The Chronicle* on NAVWAR's official U.S. Navy website at *https://www.public.navy.mil/navwar/Atlantic/Pages/Home.aspx;* and on the Intranet at *https://blog.spawar.navy.mil/chronicle/blog.*

Keep up with the command on Facebook at *http://https://www.facebook.com/NavalInformationWarfareSystemsCommand.* See us on Twitter *https://twitter.com/navwarhq,* Instagram *https://www.instagram.com/navwar_usnavy* and LinkedIn *www.linkedin.com/company/navwar.*

- Susan Bullinger, Chronicle *Editor*

The Chronicle Photo Contest

Thank you to all who submitted!

And the winner is...

Winery near Harrisonburg, Virginia
September 2019

Joe Sisti
Code 01B30

Hit us with *your* best shot

Send your best shot to *joseph.bullinger@navy.mil.*

It's raining teddy bears...

... during a Nov. 6 NIWC Atlantic Teddy Bear toss which kicked off the command's annual Toys for Tots campaign. More than 100 bears were tossed during the event. No animals were harmed in the making of this photo. (Photo by Joe Bullinger)