



# NPS IN THE NEWS

## Weekly Media Report – Jan. 12- Jan. 18, 2021

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### RESEARCH:

1. [NPS Launches Naval Warfare Studies Institute to Expedite Fleet Warfighting Solutions](#)

(*NPS.edu* 13 Jan 21)

(*Navy.mil* 13 Jan 21)

(*CHIPS* 14 Jan 21) ... Matthew Schehl

The Naval Postgraduate School (NPS) recently launched a new organization to expedite the Navy's ability to access the university's immense talent and resources in taking on its most complex warfighting issues.

2. [BNNano enters Cooperative Research and Development Agreement with U.S. Naval Post Graduate School](#)

(*EIN PRESSWIRE* 14 Jan 21) ... BNNano, INC.

BNNano Inc., the leading global supplier of enhanced Boron Nitride Nanotubes (NanoBarbs™), has entered into a Cooperative Research and Development Agreement (CRADA) with the US Naval Postgraduate School (NPS) located in Monterey, CA. NPS provides defense-focused graduate education to advance the operational effectiveness, technological leadership, and warfighting advantage of the Naval service. Boron Nitride NanoBarbs™ are a revolutionary nanomaterial with exceptional physical and chemical properties like electrical resistivity, superhydrophobicity, thermal stability, thermal conductivity, strength, and stiffness

3. [The Marine Corps' new amphibious battlewagon is cramped, fails often, and is difficult to escape](#)

(*Task & Purpose* 17 Jan 21) ... Jared Keller

The Marine Corps may be full speed ahead with its new Amphibious Combat Vehicle, but the service's first new amphibious vehicle since the Vietnam War has plenty of problems that require redress, according to a new report from the Pentagon's top weapons tester...

While service officials have launched two separate investigations into the incident, a 2014 **Naval Postgraduate School** study of Marine Corps assault amphibian vehicle emergency egress scenarios found that more Marines put into the back of the AAV, the longer it will take for them to egress from the vehicle due to the lack of maneuverability afforded by their body armor and other essential gear.

### FACULTY:

4. [America's Approach to Command and Control Goes Peer to Peer](#)

(*The Economist* 9 Jan 21) ... Jared Keller

An old proverb says you should not put all your eggs in one basket. That is a particularly good maxim for matters military. America's armed forces, for example, use modified Boeing jumbo jets, called jstars, as airborne control centres for surveillance and operations. These planes are packed with sensors and their job is to orchestrate combat by detecting targets, tracking them and then assigning them to others to deal with. They have done this well for decades. But times change. With its big electronic signature, a jstars aircraft now amounts to "a sluggish flying



bull's eye”, according to Will Roper, the American air force’s head of acquisitions... Applying AI to more C2 processes will also increase the celerity with which strikes can be ordered. Existing procedures often require raw sensor data to be sent to an operations centre, where they are stitched together and studied by staff before commanders order strikes. This can take tens of minutes, during which a target may slip away or fight back, says **Jeff Kline, a retired naval officer who is now a researcher at the Naval Postgraduate School in Monterey, California**. AI should cut that delay. In a demonstration in September, army artillery controlled by ai and fed instructions by air-force sensors shot down a cruise missile in a response that Dr. Roper describes as “blistering”.

## **5. Vaccine supply chain issues plague rollout, experts raise further concerns**

*(North State Journal 13 Jan 21) ... Elizabeth Lincicome*

As more Americans line up to receive their first doses of the COVID-19 vaccine, a number of questions remain about why certain parts of the country are so far behind in vaccine distribution, planning, and execution. Case counts in North Carolina continue to rise and Governor Cooper recently extended the state’s modified Stay At Home Order while Department of Health and Human Services Secretary Dr. Mandy Cohen issued a new warning against residents leaving home for any reason other than work, school, exercise, healthcare needs or groceries. Compounding an already deteriorating situation, North Carolina’s vaccination rate is severely lagging to the point that Gov. Cooper called in the state National Guard to help administer shots more quickly. The six person “immunization strike teams” are travelling the state and working at various vaccine sites...

One month later, it seems they were largely correct. Dr. Robert Handfield, PhD is the Bank of America University Distinguished Professor of Supply Chain Management at NCSU and the Executive Director of the Supply Chain Resource Cooperative. He, along with Dr. Daniel J. Finkenstadt, PhD, assistant professor in the Graduate School of Defense Management at the **Naval Postgraduate School** with expertise in government contracting, market intelligence and business to government markets, pointed to several hiccups and bottlenecks that are leading to the lag in vaccine distribution.

## **ALUMNI:**

## **6. SecureCo Announces Appointment of Vice Admiral T.J. White to Advisory Board**

*(EIN PRESSWIRE 13 Jan 21)*

SecureCo, Inc. (“SecureCo,” the “Company,” “we,” “our” or “us”), which offers a zero-trust platform for data-In-transit network security and continuity, today announced the appointment of Vice Admiral T.J. White (ret.) to its advisory board. The advisory board provides guidance to SecureCo management on a range of strategic considerations, including security technology and product design, government and industry requirements, and commercialization opportunities...

VADM White served in the United States Navy from 1987 to 2020 with his most recent tour as Commander, U.S. Fleet Cyber Command/U.S. Tenth FleetCyber/U.S. Navy Space Command. He previously commanded the Cyber National Mission Force/USCYBERCOM, served as director for intelligence/J2, U.S. Indo-Pacific Command, and was a deputy director, Tailored Access Operations, NSA. VADM White holds degrees from the United States Naval Academy, the **Naval Postgraduate School**, and the National Defense University. He began his career as a surface warfare officer aboard the USS Missouri (BB-63).

## **7. Beverly Hills Fire Chief Receives Cunningham Award**

*(Canyon News 13 Jan 21)*

On Tuesday, January 12, the city of Beverly Hills announced that Fire Chief Greg Barton received the Fred C. Cunningham Award, which is the city’s highest recognition for outstanding service to the community. The award is named for the City’s Executive Director of Public Affairs, Fred C. Cunningham, and recognizes an employee who has a “true vocation” for serving the community...

He has completed several educational programs such as the **Naval Post Graduate School** Center for Homeland Defense and Security-Executive Leaders Program, the Los Angeles Fire Department Leadership Academy, and the International Association of Fire Chiefs. He also led the City’s newest program, “Just in Case, BH,” which was created to keep the community informed during local emergencies or natural disasters.

## 8. [Making friends in maker-spaces: From grassroots innovation to great power competition](#)

(*War on the Rocks 12 Jan 21*) ... Leo Blanken, Romulo Dimayuga II and Kristen Tsolis

When Filipino forces retook the city of Marawi from Islamic State-backed terrorists in 2017, the need for situational awareness within that urban battlespace was paramount. Marawi is composed of densely packed, multi-story buildings with extensive tunneling and bunkers that had been designed as defensive positions to secure families against the endemic clan feuding of the region. Further, the terrorists had made extensive preparations to optimize this crowded, urban landscape into a lethal operational environment. Tactical situational awareness was crucial for security forces, as a sniper or booby-trap seemed to lay around every corner...

Let's return to the challenge faced by the Philippines armed forces and their capability gap of cheap, capable drones. Our co-author, Romulo, explored the viability of filling this gap by designing his own drone prototype in the **Naval Postgraduate School's** maker-space (the "RoboDojo") as part of his Master's program. The resulting Force Recon Marine Company Drone ("FRC Drone") is a micro traditional helicopter made from commercial-off-the-shelf hardware and software. The low-cost physical components and the free operating systems ensure that this drone can be produced for under \$1,000 per unit, which allows it to be built and sustained by a Philippines Force Recon Marines Company. Both the hardware and software are upgradable and replaceable, ensuring that the Force Recon Marine Company Drone is "future-proof" — able to accommodate evolving commercial technology and avoid rapid obsolescence.

### UPCOMING NEWS & EVENTS:

**January 26:** [V-SGL with Adm. Cecil D. Haney, U.S. Navy \(ret.\): Great Power Competition in the Cognitive Age](#)

**February 9:** NWSI Brief on the Tri-Service Strategy and the CNO's NAVPLAN

**February 15:** Presidents Day



## RESEARCH:

### **NPS Launches Naval Warfare Studies Institute to Expedite Fleet Warfighting Solutions**

*(Naval Postgraduate School 13 Jan 21) ... Matthew Schehl*

The Naval Postgraduate School (NPS) recently launched a new organization to expedite the Navy's ability to access the university's immense talent and resources in taking on its most complex warfighting issues.

NPS leadership officially "commissioned" the Wayne P. Hughes, Jr. Naval Warfare Studies Institute (NWSI) on Dec. 11 at a signing ceremony on the campus in honor of the late, revered Naval strategist. NWSI will serve as an essential portal connecting the Fleet with NPS research and expertise as the military services face new operational challenges.

"NWSI epitomizes what we at NPS are seeking to deliberately achieve, and that is the alignment of our work, our research, our education, our students and faculty focused on those things that are important to our warfighters," said NPS President retired Vice Adm. Ann Rondeau. "We can have that alignment, not only in our content and studies, but also in our conversation and integration to be able to bring together the Marine Corps, the Navy and all the other services of the Joint Force so that together we can be more efficient, deliberate and effective."

"The NWSI is how we can bring together all that we are here at NPS to Great Power Competition in this Cognitive Age," she continued. "This is the way of the future."

In this new era, the link NWSI provides will prove critical in retaining the technological, tactical and cognitive edge necessary to prevail in future conflicts. As our competitors increasingly challenge the U.S. Navy's control of the seas, new concepts such as distributed maritime operations and expeditionary base operations take center stage.

NPS has the capability to thoroughly explore every aspect of these emerging naval warfighting concepts. NWSI provides a single point of entry to harness this capability by providing a hub of experts who coordinate collaboration within the NPS ecosystem in order to accelerate and enhance the development of new warfare concepts and capabilities.

"NWSI is an institution that can call on help from different people in different domains, different warfare chairs, different faculty and students to address key operational problems," explained NWSI Director retired Navy Capt. Jeff Kline "It is a venue to leverage NPS faculty, students, education and research activities to address operational and concept development issues in an interdisciplinary manner."

NWSI consists of NPS' Senior Service Representatives and Warfare Chairs, as well as the Military Associate Deans of all four NPS graduate schools (international studies, operational and information sciences, engineering and applied sciences, and defense management). Between them, NWSI provides operational and functional expertise as well as access to all areas of study and research, every faculty member and the entire student body.

"NWSI's establishment at NPS is another aspect of our focus on enhancing our Navy's warfighting capability via education and research," noted retired Capt. Chuck Good, NWSI Deputy Director and outgoing Surface Warfare Chair. "To our external stakeholders – our customers – NWSI will act like a concierge, a one-stop-shop to access the intellectual capital resident at NPS. Internally, NWSI will act as a synchronization engine to align interdisciplinary teaching and research along warfighting lines."

Such unity of effort has become an imperative in the Cognitive Era, in which intelligent systems, big data, machine learning and artificial intelligence increasingly augment human activity and decision-making. As the Navy leans into Great Power Competition, advanced education, applied research and innovation will be the deciding factors in establishing the warfighting advantage of the Naval services.

NPS combines these in a way that no other organization can. As new operational challenges, capability gaps, tactical problems and technical issues unfold, NWSI will respond by breaking them down into the best education and research-related sub-topics and components.

"We will then federate them across our 400+ incredibly talented and diverse faculty and our 1,400+ operationally experienced mid-grade officers for solution development," said Col. Randy Pugh, NWSI Deputy Director and Senior Marine Corps Representative. "NWSI will also provide our stakeholders a



conduit to all of NPS' relationships with civilian universities, commercial and industry partners, the Naval Education Enterprise, the Naval Research and Development Establishment, and the Fleet and Marine Forces.

"The bottom line is that solving tomorrow's complex problems will require an enterprise approach and NWSI is expressly designed to help broker and then support the required cross-organizational relationships and interdisciplinary solution development," he continued.

A key component of this, Pugh added, is ensuring the NPS community remains on the same course as the Navy and Marine Corps, both of which are rapidly evolving.

"NWSI will provide cross-campus support to our faculty and students so they know exactly where the Navy-Marine Corps team is going, that they appreciate the challenges along the way and services' priority of effort, and that they have the tools they need to research and test potential solutions related to the creation and integration of new technologies, new warfighting tactics, new processes, or new ways of thinking," he said.

According to Capt. Michael O'Hara, Associate Dean for Research Integration at the Naval War College (NWC), NWSI is already extending beyond the NPS campus partnering with NWC to prepare leaders to face challenges across the spectrum of conflict.

"The Naval War College and the NPS Naval Warfare Studies Institute are natural partners whose educational and research activities complement each other," said O'Hara. "They complement each other not just in wargaming but across a spectrum of educational and research methods. Our partnership provides the best of engineering and applied sciences with strategic decision making, operational art, and ethical leadership. Second, as members of the War Gaming Pillar, NPS/NWSI and NWC are working together with other wargaming activities in the naval enterprise to support the Chief of Naval Operations' Analytic Master Plan – ensuring that all naval analytic activities benefit from the learning occurring in our wargame activities."

NWSI is aptly named after Hughes, Kline said, as the legendary author and NPS Professor of Practice devoted "his entire life thinking about naval issues; naval operations first and then about what tools can be brought to bear in order to find solutions."

Hughes, who passed away in Dec. 2019, remains a foundational figure in naval warfare. He influenced how the U.S. Navy conducts naval operations through many of his published works, most notably his "Fleet Tactics and Naval Operations," widely regarded as a foundational text for Navy officers on battle planning and tactical thinking since it was first published in 1986.

He was also a strong proponent of small combatants and called for smaller weapons-carrying platforms. This has become the clarion call for contemporary naval operations as the world's navies look to relatively inexpensive platforms like drone swarms or small, swift boats to accomplish their missions.

In this regard, Dec. 11 was an auspicious date for NWSI's inauguration. On the same day in 1942 during the Battle of Rennell Island in the Guadalcanal Campaign, five American PT boats (small, swift motor torpedo boats) engaged 11 Japanese destroyers escorting a resupply mission on the "Tokyo Express." With the loss of one PT boat, the Americans sank one destroyer, denied the Japanese from successfully resupplying their forces on the island, and dissolved the enemy's will to attempt further efforts, as it was the Tokyo Express' final run.

[NPS Launches Naval Warfare Studies Institute to Expedite Fleet Warfighting Solutions - Naval Postgraduate School](#)

[NPS Launches Naval Warfare Studies Institute to Expedite Fleet Warfighting Solutions > United States Navy > News-Stories](#)

<https://www.doncio.navy.mil/chips/ArticleDetails.aspx?id=14274>

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## **BNNano enters Cooperative Research and Development Agreement with U.S. Naval Post Graduate School**

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NPS collaborators include Professors Dr. Claudia Luhrs, Dr. Emre Gunduz, and Dr. Andy Nieto whose research and development include cold spray, additive manufacturing, and polymeric composite systems. They recognize the utility of Boron Nitride NanoBarbs™ (BNNBs) as they exhibit exceptional physical and chemical properties including superior strength and stiffness, thermal conductivity and are electrically insulative, neutron absorbing among other characteristics.

Dr. Luhrs' has more than 20 years' experience developing nanostructured materials in academic and industrial environments. Her team's targeted research tailors materials' properties resulting in nanomaterials with a wide range of applications (i.e., catalysts, batteries, supercapacitors, impact resistant, structural components, microelectronics, high temperature systems and conductive aerospace composite structures). Dr. Luhrs plans to employ NanoBarbs™ to enhance the thermal conductivity of lightweight carbon composites used by the aerospace industry. She also plans to combine them with phase change materials to optimize temperature regulation systems in living and storage spaces.

Dr. Gunduz focuses on the bulk synthesis and applications of nanostructured aluminum-based energetic materials. Such multifunctional materials provide structural support as well as thermal output in welding and additive manufacturing. A patent holder, he is involved with start-ups focused on additive manufacturing within the defense domain. Dr. Gunduz commented, "The high-strength Boron Nitride NanoBarbs™ strengthened alloys have many potential uses in the aerospace industry where weight is at a premium. The lower cost of NanoBarbs™ along with potentially comparable mechanical properties to boron nitride nanotubes, could be a game changer for these applications." He continued, "The suitability of these raw materials with additive manufacturing is especially attractive for high-performance parts fabrication with sophisticated geometries and microstructures that could be used for fuselage and engine components."

During Dr. Nieto's decade in nanotechnology, he pioneered the field of graphene reinforced ceramic matrix composites, which has grown and is implemented in numerous industries to include engine manufacturers. His research harnesses nanomaterials to develop improved materials through intelligent and systematic designs. Dr. Nieto intends to incorporate NanoBarbs™ into metallic coatings for metal part repair and thermal barrier coatings. While at the US Army Research Lab, he engineered superhydrophobicity into next generation thermal barrier coatings to protect gas turbine engines from damage induced by sand and fine particulate ingestion.

Jason Taylor, BNNano's Chief Technology Officer, expressed excitement to partner with NPS and highlighted the numerous potential commercial and defense applications. He noted, "the potential of cold spraying of NanoBarb™ reinforced composites with increased strength and corrosion resistance could revolutionize material coating and prevent wear and corrosion." Mr. Taylor also emphasized the potential applications in aerospace, thermal management, and battery materials and breakthroughs when NanoBarb™ are integrated into foam structures improving strength.

BNNano looks forward to its partnership with NPS and is eager to expand future engagement with NPS department.

[BNNano enters Cooperative Research and Development Agreement with the U.S. Naval Postgraduate School - EIN Presswire \(einnews.com\)](https://einnews.com)

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## The Marine Corps' new amphibious battlewagon is cramped, fails often, and is difficult to escape

*(Task & Purpose 17 Jan 21) ... Jared Keller*

The Marine Corps may be full speed ahead with its new Amphibious Combat Vehicle, but the service's first new amphibious vehicle since the Vietnam War has plenty of problems that require redress, according to a new report from the Pentagon's top weapons tester.

According to a new report from Defense Department's operational testing and evaluation arm, the new ACV demonstrated several "vulnerabilities" in its survivability and force protection capabilities when it comes to kinetic threats, although the specifics are detailed in a classified annex.

Among the technical problems listed in the OT&E report is a low mean time between operational mission failures of roughly 39 hours between issues, well below the reliability requirement of 69 hours, meaning that the system broke down way more often while acceptable. And while the ACV generally demonstrated "good operational availability and maintainability," most of the failures involved the vehicle's vaunted remote weapon station, its hatch and ramp sensors, and various suspension components.

Even worse: for infantry Marines, it apparently makes for an incredibly uncomfortable ride — one that's hard to escape in case of emergency.

"Due to the placement and number of blast mitigating seats, interior space within the ACV is limited, making rapid ingress and egress difficult," according to the OT&E report. "Infantry Marines noted that the troop seats were not contoured to fit body armor configurations, leading to discomfort during long-range ship-to-objective missions."

This isn't just a frustrating development for anyone who's found themselves stuck in the belly of one of the Corps' current fleet of aging Amphibious Assault Vehicles, but a concerning one given the recent sinking of an AAV this past summer during training off San Clemente Island in California.

Nine crew members were killed, making the incident the Corps' deadliest training accident in the history of the AAV.

While service officials have launched two separate investigations into the incident, a 2014 **Naval Postgraduate School** study of Marine Corps assault amphibian vehicle emergency egress scenarios found that more Marines put into the back of the AAV, the longer it will take for them to egress from the vehicle due to the lack of maneuverability afforded by their body armor and other essential gear.

"Designers of future vehicles must consider the relevant anthropometric measures of the entire infantry population and build a vehicle in which egress is not impeded for Marines of any size," according to the study — measures that the new ACV doesn't appear to have taken into account, according to the OT&E report.

Despite this, the Corps is plowing forward with the new vehicles, and the first ACVs hit the fleet in early November during a redesignation ceremony for Co. D, 3rd Assault Amphibian Battalion, 1st Marine Division at Marine Corps Air Ground Combat Center Twentynine Palms in California.

In December, the service officially announced that it has approved the ACV for full-rate production, which means the Corps "can build and field higher quantities of the ACV at a sustained rate over the next several years," according to a Marine Corps Systems Command release.

"We're providing Marines with a modern, armored personnel carrier that offers tremendous capability with respect to survivability," Col. Kirk Mullins, program manager for Advanced Amphibious Assault at PEO Land Systems, said in a statement at the time. "The ACV gives the Marine Corps a capable platform operational across the full-range of military operations."

[Marine Corps Amphibious Combat Vehicle has some serious problems \(taskandpurpose.com\)](http://taskandpurpose.com)

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## **FACULTY:**

### **America's Approach to Command and Control Goes Peer to Peer**

*(The Economist 9 Jan 21) ... Jared Keller*

An old proverb says you should not put all your eggs in one basket. That is a particularly good maxim for matters military. America's armed forces, for example, use modified Boeing jumbo jets, called jstars, as airborne control centres for surveillance and operations. These planes are packed with sensors and their job is to orchestrate combat by detecting targets, tracking them and then assigning them to others to deal with. They have done this well for decades. But times change. With its big electronic signature, a jstars aircraft now amounts to "a sluggish flying bull's eye", according to Will Roper, the American air force's head of acquisitions.

Similar doubts are growing about the satellites, warships and other big pieces of hardware involved in the command and control of America's military might. For the past couple of decades the country's generals and admirals have focused their attention on defeating various forms of irregular warfare. For this, these castles in the sky and at sea have worked well. In the meantime, however, America's rivals have been upgrading their regular forces—including weapons that can destroy such nodes of power. Both China and Russia have successfully blown up orbiting satellites. And both have developed, or are developing, sophisticated long-range anti-aircraft and anti-ship missiles.

As a result, America is trying to devise a different approach to C2, as command and control is known in military jargon. The Department of Defense has dubbed this idea "Joint All-Domain Command and Control", or JADC2. It aims to eliminate vulnerable nodes in the system by multiplying the number of peer-to-peer data links that connect pieces of military hardware directly to one another, rather than via a control centre that might be eliminated by a single, well-aimed missile.

Nor is that node-reducing ambition confined merely to the sophisticated and expensive stuff. The goal, officials say, is to create a network that links "every sensor and every shooter". When complete, this will encompass sensors as small as soldiers' night-vision gear and sonar buoys drifting at sea, and shooters as potent as ground-based artillery and aerial drones armed with Hellfire missiles.

#### **Sense and sensibility**

One likely beneficiary of the JADC2 approach is Anduril Industries, a Californian firm that makes devices at the sensor end of the sensor-and-shooter list. Its products include small spy helicopter drones; radar, infrared and optical systems constructed as solar-powered towers; and paperback-sized ground sensors that can be disguised as rocks. In tests, the American air force has networked these products with fighter jets, ground-based artillery, surface-to-air missiles and "hunter-killer" drones. As Christian Brose, once staff director of the Senate Armed Services Committee and now Anduril's chief strategy officer, observes, the variety of kit involved in this sort of approach permits equipment that is failing to do a useful job in a particular set of circumstances to be "swapped out" and replaced by something else.

Sensors come in still-more-diverse forms than Anduril's, though. An autonomous doglike robot made by Ghost Robotics of Philadelphia offers a hint of things to come. In addition to infrared and video systems, this quadruped, dubbed v60 q-ugv, can be equipped with acoustic sensors (to recognise, among other things, animal and human footsteps), a millimetre-wave scanner (to see through walls) and "sniffers" that identify radiation, chemicals and electromagnetic signals. Thanks to navigation systems developed for self-driving cars, v60 q-ugv can scamper across rough terrain, climb stairs and hide from people. In a test by the air force this robot was able to spot a mobile missile launcher and pass its location on directly to an artillery team.

#### **Only connect**

Artificial intelligence (AI) is an important ingredient of all this. Among other things, AI can work out the combination of hardware best suited to take on threats "popping up in the battlespace", says Todd Harrison, a defense analyst at the Centre for Strategic and International Studies, an American think-tank. He likens this to the function of apps that match ride-hailers with the most appropriate drivers. The more

decentralized the AI processing is, the better. Pushing it “out to the tactical edge”, as JADC2 geeks are wont to put it, reduces the amount of data to be transmitted, and thus the amount available for an enemy to intercept or jam.

Applying AI to more C2 processes will also increase the celerity with which strikes can be ordered. Existing procedures often require raw sensor data to be sent to an operations centre, where they are stitched together and studied by staff before commanders order strikes. This can take tens of minutes, during which a target may slip away or fight back, says **Jeff Kline, a retired naval officer who is now a researcher at the Naval Postgraduate School in Monterey, California**. AI should cut that delay. In a demonstration in September, army artillery controlled by AI and fed instructions by air-force sensors shot down a cruise missile in a response that Dr. Roper describes as “blistering”.

A JADC2 rich in AI promises not just faster decisions, but better ones. It could, for example, assign planes to bombing missions that require aerial refueling to complete. By taking into account things like wind speeds, air defenses, flight altitudes and the weights and stealth of the planes concerned, AI can find efficiencies that might elude rushed human dispatchers.

Perhaps most valuably, JADC2 will devise courses of action that commanders might not otherwise have realized were possible. AI can, for example, keep track of a government’s myriad cyber capabilities and propose actions that might be relevant for an operation. It might inform a commander that a building to be destroyed could be first emptied thanks to an ability to activate its fire alarm or sprinklers. Or it might determine that temporarily disabling an area’s electricity or telecommunications network would render a strike unnecessary. It can also sort through probable knock-on effects of an action, to warn, say, that a certain type of blast might contaminate a local water supply.

JADC2’s supporters envisage a wide-ranging system. By sifting through satellite imagery, AI could flag a troubling change in activity in a port, says Mr. Kline. Postings on social media could alert AI to unusual troop movements abroad. And JADC2 will no doubt also ingest reports written by human spies, says David Deptula, Dean of the Mitchell Institute for Aerospace Studies, an American think-tank.

There are, however, numerous obstacles to the success of all this. For a start, developing unhackable software for the purpose will be hard. Legions of machines containing proprietary and classified technologies, new and old, will have to be connected seamlessly, often without adding antennae or other equipment that would spoil their stealthiness.

There are human obstacles, too. For one thing, JADC2 is intended to link systems belonging to the air force, army, marines, navy, space force and intelligence agencies. Battles over which of these will be crowned the master setter of technical standards have duly begun.

The army, which calls its part of JADC2 Project Convergence, is unlikely to carry the day. It has less experience than the other services in managing long-range data networks and is generally considered too low-tech to pull things off.

A stronger case is made by the navy, which has dubbed its slice of JADC2 Project Overmatch. The navy already operates impressive networks involving submarines, surface vessels, aircraft and satellites. However, its reputation of having a culture of operational independence may count against it.

The likeliest leader, therefore, is the air force. This service is able to operate over the entire planet. It is also already in possession of Battlefield Airborne Communications Node (BACN), a system that translates and relays data between dissimilar communications arrangements without requiring either their prior modification or that they be within line of sight of each other. BACN’s operational success, Mr. Deptula says, suggests that it or similar data translators could help build an ethereal nervous system for JADC2.

## Net benefits

Big bucks will be needed, too. Members of America’s Congress tend to like military hardware, which brings the promise of “politically engineered” manufacturing in their constituencies. Intangibles such as data protocols are a more difficult sell. And it probably will not help that some vocal voters fear a weapons network with AI might one day take over for itself the decision of what to attack, in the fashion of Skynet in the “Terminator” films. Officials stress that such autonomy is not on the cards. Beyond that, last year the defense department adopted an AI-ethics charter which requires, among other things, that



humans remain in control of, and responsible for, AI systems. The question is whether those limits will continue to hold if America's adversaries one day secure an edge by giving their own AI freer rein.

America's allies may pose problems of a different sort. Some other countries, especially in Europe, have restrictions on how their armed forces' kit may be used in multinational operations. Programming JADC2 to respect this patchwork of caveats will not be easy, says Henrik Breitenbach, head of Copenhagen University's Centre for Military Studies. Beyond that, some allies' data networks contain Chinese components, which many suspect harbour secret back doors for espionage or sabotage.

Efforts by America's principal rivals to develop their own weapons-networking software are also thickening the plot. It is by no means clear that America will come out on top in this arms race. China's AI developers are able to train algorithms using unparalleled pools of data, garnered thanks to the country's weak privacy protections and huge population. China and Russia are also investing heavily in disrupting C2, Mr. Harrison notes.

In exercises in the Arctic and in fighting in Ukraine and Syria Russian forces have intercepted and disrupted terrestrial and satellite signals, worked out the locations of the hardware involved, and relayed the co-ordinates to targeting systems. The sophistication involved has persuaded the American army to halt a chunk of development work for a new communications network called WIN-T. This will need, Mr. Harrison says, to become "much more robust, hardened, protected" than planned.

America's technologists must, then, link the country's military equipment into a "kill web" so robust that attempts to cripple it will amount to "trying to pop a balloon with one finger", as Timothy Grayson, head of strategic technologies at DARPA, the defense department's main research agency, puts it. Yet they must also keep that network under ultimate human control.

<https://www.economist.com/science-and-technology/2021/01/09/americas-approach-to-command-and-control-goes-peer-to-peer>

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## **Vaccine supply chain issues plague rollout, experts raise further concerns**

*(North State Journal 13 Jan 21) ... Elizabeth Lincicome*

As more Americans line up to receive their first doses of the COVID-19 vaccine, a number of questions remain about why certain parts of the country are so far behind in vaccine distribution, planning, and execution. Case counts in North Carolina continue to rise and Governor Cooper recently extended the state's modified Stay At Home Order while Department of Health and Human Services Secretary Dr. Mandy Cohen issued a new warning against residents leaving home for any reason other than work, school, exercise, healthcare needs or groceries. Compounding an already deteriorating situation, North Carolina's vaccination rate is severely lagging to the point that Gov. Cooper called in the state National Guard to help administer shots more quickly. The six person "immunization strike teams" are travelling the state and working at various vaccine sites.

The Centers for Disease Control shows that North Carolinians are receiving their first dose of the vaccine at a slower rate than much of the rest of the country (N.C.'s rate of 966 vaccinations per 100,000 people is the sixth lowest in the nation.) Dr. Cohen recently told media outlets that some of the state's health departments and hospitals have used all of their vaccine allocation, while others are grappling with issues ranging from data entry to information technology issues to not having enough staff to actually administer vaccine.

DeAnne Brooks, chief pharmacy officer for Cone Health in Greensboro said in a recent interview that another problem she was seeing was with delivery and the need to monitor patients for longer periods. "Most vaccines, we can take the vaccine to the people. This is a vaccine that we need to bring the people to the vaccine, and we don't want to have long lines of people wrapped around the building to administer the vaccine. The other challenge in getting the vaccine out faster is that people have to be observed for 15 minutes after they get the shot."



Cohen also cites reporting issues at the local level. In response she says DHHS will begin rewarding facilities for accurate recording and management, while indirectly punishing others. According to Amanda Fuller Moore, a pharmacist in the state’s public health department, the state will allocate supply to those facilities who are in need because they are effectively administering vaccines. She says that the CDC may also consider this data in determining how to allocate constrained supply to the various states. “So, any location’s failure to provide accurate and complete data can impact the vaccine supply to the entire state.”

Unfortunately, since the pandemic first set in and Operation Warp Speed was put into motion, experts have been warning of potential problems based on the global supply chain and concerns about vaccine delivery and storage. In December the Supply Resource Chain Cooperative in NC State’s Poole College of Management called on two of the country’s leading supply chain experts to explain in detail potential problems and challenges. One month later, it seems they were largely correct. Dr. Robert Handfield, PhD is the Bank of America University Distinguished Professor of Supply Chain Management at NCSU and the Executive Director of the Supply Chain Resource Cooperative. He, along with Dr. Daniel J. Finkenstadt, PhD, assistant professor in the Graduate School of Defense Management at the **Naval Postgraduate School** with expertise in government contracting, market intelligence and business to government markets, pointed to several hiccups and bottlenecks that are leading to the lag in vaccine distribution. These include national security issues including theft, sabotage and counterfeiting, shortage of personnel and supplies, lack of coordination, limited capacity, vaccine damage, gaps for rural areas, and misinformation about vaccines and tracking.

In a recent update to his December discussion, Handfield says vaccine delays are going to continue and says there are still severe bottlenecks in cold chain capabilities. “Using data from the Homeland Infrastructure Foundation, we identified what the public refrigerated warehouse map actually looks like. Major urban centers, especially the Northeast and Midwest, are in pretty good shape. But then you have this huge gap in the center of the country – the Dakotas, Montana, Wyoming, New Mexico, parts of West Texas – where there isn’t a lot of cold storage capacity.”

He also mentions bottlenecks once the vaccines do reach N.C. “A recent article posted by Dan Stanton and Phil Palin note that several causes are implicated: lack of funding, Christmas distractions, fatigue among public health professionals, health care providers being seriously overextended, stockpiling for rollout to long-term care facilities, lagging throughput data, and much more,” said Handfield.

“This makes a lot of sense. If you think about it, states and healthcare providers are already overwhelmed, and turnover among healthcare workers have never been greater,” he noted.

Finkenstadt sees problems with data tracking and information sharing as two of the leading concerns. “Bottom line, we still have disjointed information sharing in the process. Information is the critical commodity during this emergency. What we don’t know can and will hurt us. Make no mistake, this is a huge logistical challenge and one that is riddled with litigious landmines. Individual medical data is very sensitive and highly protected in America as it should be. But, when we are all after a common good (vaccine) that has far fewer supply allocations that need points, we may have to get creative and take personal liberty risks for public safety gains.”

That sentiment, however, while shared by many academics and public health officials, could be another deterrent in vaccine compliance, as national polls, as well as numbers in some European countries such as France and Spain, indicate that sharing personal data seems to be a leading cause for hesitation among citizens.

[Vaccine supply chain issues plague rollout, experts raise further concerns – The North State Journal \(nsjonline.com\)](https://www.nsjonline.com)

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## ALUMNI:

### SecureCo Announces Appointment of Vice Admiral T.J. White to Advisory Board

*(EIN PRESSWIRE 13 Jan 21)*

SecureCo, Inc. (“SecureCo,” the “Company,” “we,” “our” or “us”), which offers a zero-trust platform for data-in-transit network security and continuity, today announced the appointment of Vice Admiral T.J. White (ret.) to its advisory board. The advisory board provides guidance to SecureCo management on a range of strategic considerations, including security technology and product design, government and industry requirements, and commercialization opportunities.

VADM White served in the United States Navy from 1987 to 2020 with his most recent tour as Commander, U.S. Fleet Cyber Command/U.S. Tenth FleetCyber/U.S. Navy Space Command. He previously commanded the Cyber National Mission Force/USCYBERCOM, served as director for intelligence/J2, U.S. Indo-Pacific Command, and was a deputy director, Tailored Access Operations, NSA. VADM White holds degrees from the United States Naval Academy, the **Naval Postgraduate School**, and the National Defense University. He began his career as a surface warfare officer aboard the USS Missouri (BB-63).

Over his 33 years of military service, VADM White gained unparalleled insight and experience in cyberspace security and intelligence operations across the Department of Defense (“DoD”), and in coordination with other federal agencies and international partners. In his joint and service command roles, he promoted the agency’s mission of defending the DoD information networks, providing support to combatant commanders for execution of their missions around the world, and strengthening the ability of the United States to withstand and respond to cyber attack.

“SecureCo is excited to welcome Admiral White, whose experience garnered over a distinguished military career aligns very well with our objective to offer enhanced cybersecurity capabilities to the U.S. federal government.” said Alex Harrington, CEO of SecureCo. “We believe we will benefit greatly from his thought leadership and deep insights into the technology requirements of the military and intelligence community.”

[SecureCo Announces Appointment of Vice Admiral T.J. White to Advisory Board - EIN Presswire \(einnews.com\)](#)

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### Beverly Hills Fire Chief Receives Cunningham Award

*(Canyon News 13 Jan 21)*

On Tuesday, January 12, the city of Beverly Hills announced that Fire Chief Greg Barton received the Fred C. Cunningham Award, which is the city’s highest recognition for outstanding service to the community. The award is named for the City’s Executive Director of Public Affairs, Fred C. Cunningham, and recognizes an employee who has a “true vocation” for serving the community.

“The City Council is so pleased to recognize Chief Barton for his remarkable contributions to our community,” said Mayor Lester Friedman. “During his 25 year career with our City, Greg has been on the front lines working to save lives, property and keep our City safe. On behalf of the Beverly Hills community, we thank him for his dedicated service and the example he sets for all of us.”

A committee, consisting of the City Manager, the president of the Municipal League, president of the Chamber of Commerce, president of the Rotary Club, a former city councilmember, and two sitting city councilmembers unanimously selected Chief Barton for the award.

Prior to his appointment as Fire Chief in June of 2017, Chief Barton served as Firefighter, Fire Inspector, Fire Captain, Deputy Fire Marshal, Shift Battalion Chief, and Deputy Fire Chief.

Chief Barton serves as a member of the Board of Directors for the Maple Counseling Center, Director of the Beverly Hills Fire Chief Funds, Executive Team Member on the Beverly Hills 9/11 Memorial



Committee, and Governance Board Representative for Beverly Hills on the Interagency Communications Interoperability System.

He has completed several educational programs such as the **Naval Post Graduate School** Center for Homeland Defense and Security-Executive Leaders Program, the Los Angeles Fire Department Leadership Academy, and the International Association of Fire Chiefs. He also led the City's newest program, "Just in Case, BH," which was created to keep the community informed during local emergencies or natural disasters.

"I am truly honored and humbled to receive the Fred Cunningham Award," said Chief Barton on Tuesday evening. "If you do something you like to do, you'll never work a day in your life. That is so true, I have a dream job as a firefighter and on top of that, I work for the dream community of Beverly Hills. Thank you all."

[Beverly Hills Fire Chief Receives Cunningham Award - Canyon News \(canyon-news.com\)](http://canyon-news.com)

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### **Making friends in maker-spaces: From grassroots innovation to great power competition**

*(War on the Rocks 12 Jan 21)* ... Leo Blanken, Romulo Dimayuga II and Kristen Tsolis

When Filipino forces retook the city of Marawi from Islamic State-backed terrorists in 2017, the need for situational awareness within that urban battlespace was paramount. Marawi is composed of densely packed, multi-story buildings with extensive tunneling and bunkers that had been designed as defensive positions to secure families against the endemic clan feuding of the region. Further, the terrorists had made extensive preparations to optimize this crowded, urban landscape into a lethal operational environment. Tactical situational awareness was crucial for security forces, as a sniper or booby-trap seemed to lay around every corner.

The Islamic State fighters, through their purchase of commercial drones, however, at times had better reconnaissance capabilities than the Armed Forces of the Philippines, a key U.S. ally. In the words of one Filipino army ranger, "The Islamic State militants are better armed, with high-powered weapons, night vision goggles, the latest sniper scopes and surveillance drones." The tactical drones necessary to provide similar awareness to Philippines troops existed but were sometimes underutilized. Fully employing these American-provided drones, such as the RQ-20 Puma, would have delivered better tactical reconnaissance for the Filipino forces, but their cost and scarcity ensured that the control of these systems was often retained at higher command levels. Further, the fear of losing such expensive equipment induced risk aversion among decision-makers and prevented them from being released for some missions, resulting in operational units often being disadvantaged against their Islamic State opponents. A cheap, capable drone — designed to basic military specification and made widely available to tactical units — would have made the battle for Marawi much easier for Philippines security forces.

As this example makes clear, U.S. partner militaries often find themselves in a "dead zone" between the high-tech systems supplied by the United States and the budgets, capacity for sustainment, and actual needs of the end-user. What is the solution? We propose marrying grassroots innovation and existing security force assistance efforts to generate solutions for partner force capability gaps. This collaboration would take place "on the ground" in the host nation. U.S. advisors would work to foster grassroots innovation alongside the partner force personnel and actors from the wider host-nation innovation ecosystem. Building on the concept of "maker-spaces" — defined as informal workshops that emphasize knowledge sharing, experimentation, and the use of technological tools that have low barriers to entry — this effort would emphasize home-grown solutions that are technologically and financially "right sized" for the host nation and the end-users.

This approach for partner force innovation has a number of attractive characteristics. First, maker-spaces are already proliferating across the U.S. military and the concept could be easily adapted to security force assistance missions. Second, it is a solution that can fill the gap identified in the vignette above: providing tailored and sustainable solutions to partner force needs. Third, scaling this model



would have nice spillover effects. It would energize the host nation's innovation base and generate opportunities for increased synchronization with other facets of U.S. foreign policy, such as economic development. Finally, as the U.S. military is desperately seeking effective lines of effort to succeed in an era of great-power competition, the maker-space model provides a cost-effective and immediately actionable tool to crowd out Chinese or Russian influence by fostering more collaborative relationships with allies and partners.

Our maker-space suggestion is just one small piece of the puzzle in fixing a much larger challenge in American national security policy: building partner force capacity. In other words, the United States wants to help generate and shape allied military capabilities that serve as a cost-effective and lower-risk alternative to the direct employment of American military force. American efforts to accomplish this goal, however, have sometimes resulted in spectacular failures. Take for example the U.S. attempt to rebuild the Iraqi military after the 2003 invasion. After providing \$10 billion in military aid from 2003 to 2014 — to include M1A1 Abrams tanks and F-16 fighters — the Islamic State forces still ran roughshod over the Iraqi military. One report offers an unequivocal summary: “In June 2014, an irregular army of lightly equipped [Islamic State] terrorists defeated the internationally supported and equipped [Iraqi Security Forces] ... The decade-long effort to create a viable Iraqi force in mirror image to the [United States] had failed.”

What does the tragic case of Iraq tell us? The U.S. military's tendency to default to organizing and equipping partner forces to look and act like American forces is often a mistake. Usually, an expensive one. Sometimes this “mirror imaging” of partner forces occurs due to simple bureaucratic inertia and mental laziness on the American side. Sometimes it is done because the partner force desires the trappings of a “modern” military for reasons of prestige or simple corruption. Whatever the reason, it often results in the equipping of partner forces with technology that is inappropriate for their needs or is too difficult to employ or sustain. A recent RAND report states,

Too often, the equipment provided ... is ill suited to [partner nation] forces, either because it is too sophisticated for them ... or beyond their capability (or inclination) to maintain ... This results in the equipment being relegated to a warehouse because of a lack of technical or maintenance capacity.

This passage describes the “dead zone” between American assistance efforts and the partner force's need for appropriate, cost-effective, and sustainable capabilities. Our maker-space model offers one possible solution.

### **Tailoring Assistance to Partners**

Rather than simply offloading American material onto allies, new avenues could be developed to create bespoke capabilities for partner forces. Two components would be required: ingenuity and technology. The ingenuity could be provided through the innovation efforts of host-nation personnel and enabled by American support. Adapting the current security force assistance activities of American advisors — especially special operations forces — to foster and empower partner forces would be a potent mechanism to design such tailored solutions. Further, these home-grown capabilities would establish crucial “buy in” from the end-user while also building stronger relationships with U.S. partners. The technology is also readily available. The commercial market is often leaping ahead of the defense sector in producing ready-made tools for many of the functions that smaller militaries require. From hardware to software, the private sector keeps refining, miniaturizing, and productizing the components that can be modified or repurposed for security applications.

In addition, the American military already has a model to form the nuclei of these collaborative innovation efforts: the maker-space. This “do-it-yourself” ethos has evolved from hobbyist clubs that were dedicating to building personal computers back in the 1970s, to their modern form, in which tinkerers can readily employ tools such as computer-aided design, 3D printing, computer numeric control, laser cutting, and other forms of fabrication. A crucial aspect of these spaces is the philosophy that anyone can “play” with these tools without the need for advanced technical training. Novices pool their knowledge, encourage one another, and work collaboratively to produce solutions. These spaces — also referred to as “hacker spaces,” “maker labs,” and “fab labs” — are designed to foster dynamic problem-solving through rapid prototyping and creative experimentation. The U.S. military is already embracing



such maker-spaces to solve many problems at the grassroots level. The Defense Advanced Research Projects Agency understood the potential impact of these spaces on military logistics and readiness when it funded the “MENTOR2” program to harness the know-how of military members to address in-theater fabrication. Since then, maker-spaces have been utilized on a number of military bases, on ships, in space, and at most service academies. The Marine Corps is especially interested in 3D printing to solve supply chain challenges. Military maker-spaces and rapid prototyping gear have fabricated everything from prosthetics, to rifle trigger guards, to drones, to a tool for gas turbine maintenance and, more recently, personal protective equipment to prevent coronavirus transmission.

Let’s return to the challenge faced by the Philippines armed forces and their capability gap of cheap, capable drones. Our co-author, Romulo, explored the viability of filling this gap by designing his own drone prototype in the **Naval Postgraduate School’s** maker-space (the “RoboDojo”) as part of his Master’s program. The resulting Force Recon Marine Company Drone (“FRC Drone”) is a micro traditional helicopter made from commercial-off-the-shelf hardware and software. The low-cost physical components and the free operating systems ensure that this drone can be produced for under \$1,000 per unit, which allows it to be built and sustained by a Philippines Force Recon Marines Company. Both the hardware and software are upgradable and replaceable, ensuring that the Force Recon Marine Company Drone is “future-proof” — able to accommodate evolving commercial technology and avoid rapid obsolescence.

Romulo’s work demonstrates the viability of designing and building a prototype to basic military specifications by a user who had no technical expertise before entering the maker-space. He relied almost solely on open-source information, workshops hosted by the RoboDojo, and minimal funding. This experience shows that a solution to a capability gap need not be expensive and exquisite. The solution might rather be low-cost and bottom-up, as was the case here. Not only did the Force Recon Marines find a solution to their own problem, but the method of such a solution can “trickle-up” to the broader military organization by sparking wider innovation networks and activity across the Armed Forces of the Philippines.

### **Maker-Space and Great-Power Competition**

The Defense Department faces three key challenges in working with allies and partners. First, building partner capacity is becoming even more important for American national security. Second, the United States can no longer afford to give loads of expensive military equipment to all the partner nations who it wants to influence or with whom it wants to ally. Third, there is a growing disconnect between the type of high-tech weapons and systems that are useful for the U.S. military and the lower-tech security needs of our allies and partners. Using the maker-space model to develop cost-effective, sustainable, and tailored solutions to partner force capability gaps can address each of these issues. Further, by energizing host-nation innovation ecosystems across the indigenous commercial and academic sectors it adds a “whole of government” flavor that current defense policy is sorely lacking.

By itself, this solution will not solve the problem of competing with China and Russia, and it is not intended to supplant other forms of assistance. It would, however, be a fresh vehicle to update American partnering efforts while strengthening our relationships with partner forces.

[Making Friends in Maker-Spaces: From Grassroots Innovation to Great-Power Competition - War on the Rocks](#)

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