CTMA CONNECTOR

SUMMER 2026

Leading-Edge Technologies Support B-1 Fleet's Longevity

P5

IN THIS ISSUE

CTMA Connector

CTMA Program

Debbie Lilu
EVP Mx and Sustainment, Business Development

CTMA Connector Staff

Pam Hurt
Executive Editor

Nancy LaMarca
Editor

Christina LaRose
Senior Writer

Ryan Burklow
Writer

Lindsey Konarske
Designer

Briana Ring
Designer

UPCOMING EVENTS

June 16–18, 2026
Coast Guard Aviation Logistics Center (ALC) Modernization and Sustainment Accelerator
Elizabeth City, NC

June 22, 2026
Entry Deadline for CTMA Technology Competition

July 14–15, 2026
NAVSEA 05P Corrosion Control Industry Day
Virginia Beach, VA

August 4–6, 2026
Global Expeditionary Logistics Symposium (GELS)
Newport News, VA

August 11–13, 2026
Ground Vehicle Systems Engineering & Technology Symposium (GVSETS)
Novi, MI

August 25–27, 2026
Sustainment Accelerator Puget Sound Naval Shipyard
Bremerton, WA

September 22–24, 2026
2026 CTMA Partners Meeting
Jacksonville, FL

All NCMS events are subject to change. Please check the NCMS Events Page for the latest updates. Please email eventsupport@ncms.org with any questions.

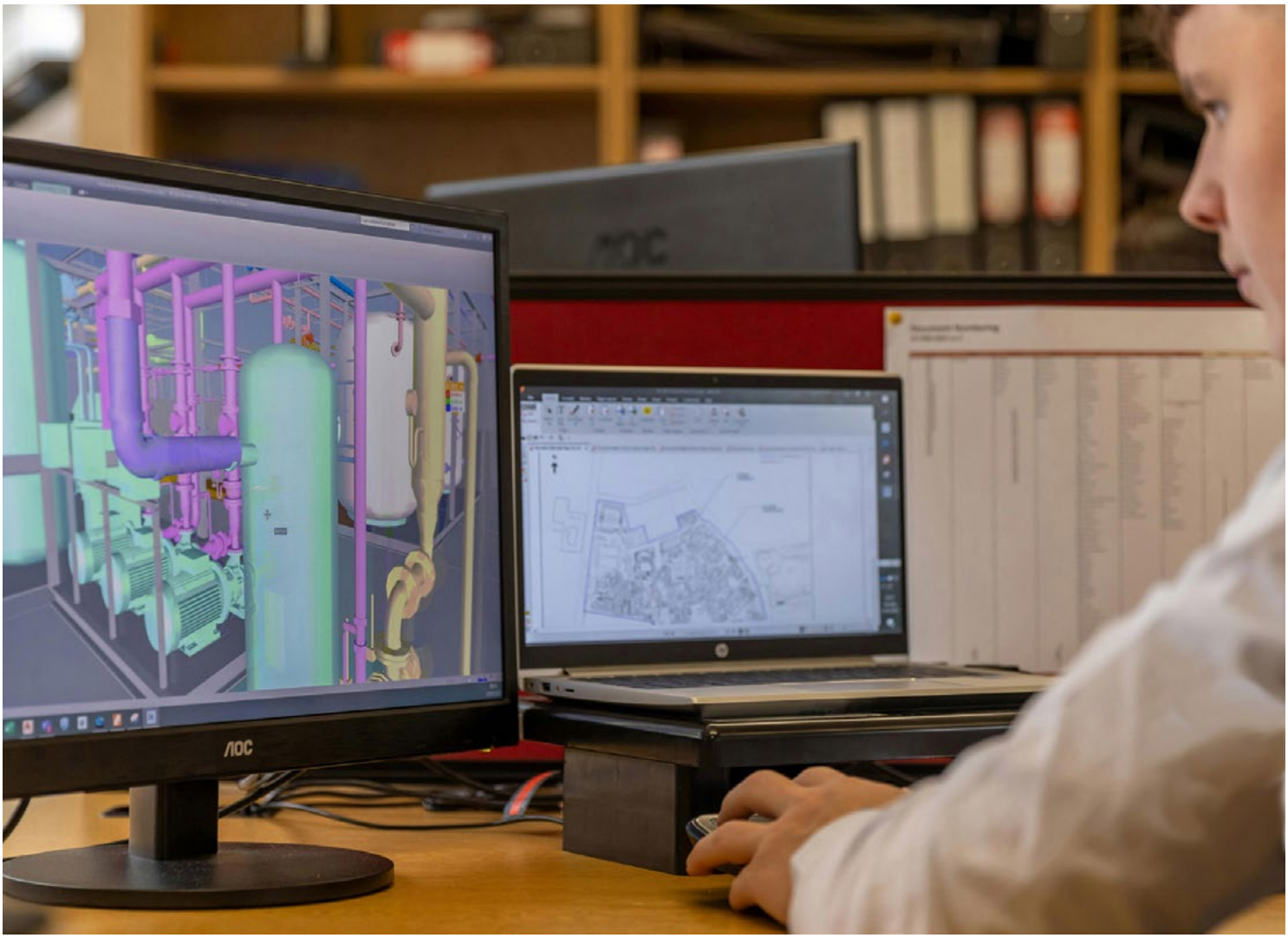
Join the CTMA Connector digital distribution list.
Visit: https://ncms.org/connect-with-ncms

About NCMS

The National Center for Manufacturing Sciences (NCMS) is a cross-industry technology development consortium, dedicated to improving the competitiveness and strength of the US industrial base. As a member-based organization, it leverages its network of industry, government, and academic partners to develop, demonstrate, and transition innovative technologies efficiently, with less risk and lower cost.

About CTMA

The CTMA Program offers a unique contracting vehicle for industry, academia, and the DoW sustainment community to work collaboratively. Through these efforts they promote the demonstration, evaluation, and validation of new and innovative technologies that enhance warfighter readiness at optimal value and lowest risk. This non-FAR based contracting vehicle is the only DoW-wide program focused solely on maintenance and sustainment.



A participant in a recent Public Private Training Experience held by the US Army Acquisition Support Center gains digital engineering experience with CAD tools and processes. (US Army photo by Aliyah Harrison.)

NCMS Initiative Supports Army's Digital Engineering Training Goals

As the Army actively transitions to digital engineering, NCMS is providing a secure, multi-cloud digital ecosystem where Army engineers are advancing their skills in model-based systems engineering (MBSE). This initiative supports DoW Instruction 5000.97, "Digital Engineering" and Army Directive 2024-03, "Army Digital Engineering," both of which provide procedures for accelerating digital engineering methodologies, technologies, and practices. Expanding usage of digital engineering is a high priority across the DoW because it reduces costs, shortens acquisition timelines, and improves system sustainment through high-fidelity virtual representations.

The Army currently has three main focus areas for applying digital engineering: ground vehicles, aviation, and sensors. An essential part of this process is transitioning Army engineers and product teams to MBSE. Recently, a CTMA project team trained a cohort of Army engineers on an MBSE tool via the NCMS Digital Enterprise, which provides a secure, multi-cloud digital ecosystem to safely demonstrate capabilities with multiple partners from government agencies, industry, and academia. This digital ecosystem employs AWS GovCloud environments that are NIST 800-171 compliant up to the DoW IL5 level.

In this CTMA project, Army engineers completed training within the NCMS Digital Enterprise using a Siemens integrated systems engineering environment called System Modeling Workbench®. This tool allows teams to

create and manage multi-domain product architectures and digital threads, allowing them to apply MBSE concepts to the entire product development process.

"This project provided a scalable training environment for upscaling the workforce in a very rapid manner using digital engineering tools," Richard Fink, Service Program Manager, Siemens Government Technologies, said. "We set up an environment for engineers where everything was ready to go, from training materials to instructors to support mechanisms."

The project team established multiple pathways for workforce development. "A combination of classes and office hours provided the engineers with support while they started to use the new technology," Fink said.

"The biggest success of this project is that we were able to interface with Army users from different levels," Phillip Palanca, Software Implementation Consultant for Siemens Government Technologies, said. "There was a seamless transition in enabling the use of Siemens solutions in the NCMS Digital Enterprise multi-cloud environment. This fast transition time allowed engineers to gain hands-on experience."

> **"We learned what is necessary to establish a process by which a group of users from various organizations, but with a common functional responsibility, can get trained up on a new capability very quickly."**
>
> *– Richard Fink, Siemens Government Technologies*

The CTMA project team learned lessons that can be leveraged for multiple types of workforce development initiatives across numerous technical areas—not only in the Army and DoW, but also in a wide range of public- and private-sector organizations.

"We learned what is necessary to establish a process by which a group of users from various organizations, but with a common functional responsibility, can get trained up on a new capability very quickly," Fink said.

"It's very beneficial to have a ready-to-go environment with the technology there, where users just need access," Fink said. "Instructor-led training with SMEs available to support provides the right kind of environment. This approach can be scaled by adding new software, scheduling new training, or identifying users in different functional areas."

Moving forward, the team will continue to grow the Digital Engineering Training Lab by expanding it across multiple technical areas.

"If functional managers and program managers have needs in a particular technical area, this resource is available for workforce development and upskilling," Palanca said. ■

Sweep Up For Government Funds is Coming

To our government partners: If you are needing to obligate expiring FY26 funding, please consider leveraging the Commercial Technologies for Maintenance Activities (CTMA) Program as an option for advancing your maintenance and sustainment technology goals, because "sweep up" is near—where those who still have funding in their budgets seek ways to obligate those funds prior to the end of FY26 or lose them.

The CTMA Program can help guide your discussions. The CTMA Cooperative Agreement is an easy-to-use contract vehicle that is 100 percent focused on improving maintenance and sustainment operations across the DoW to optimize warfighter readiness.

But don't delay—The window to obligate expiring funding through the CTMA's Cooperative Agreement will be closing soon. Funding MIPRs and paperwork for future projects must be received in-house at NCMS no later than Friday, August 7, to leverage this contract vehicle for FY26 funds.

Don't let this deadline affect your critical projects. For more information about CTMA, please visit: https://ncms.org/ctma-home/. ■

A B-1B Lancer, operational fleet aircraft 86-0117, arrives at Wichita State University's National Institute for Aviation Research (NIAR) to repair its forward intermediate fuselage. (2 Circle Inc. photo by Abigail Ngo.)

Leading-Edge Technologies Support B-1 Fleet's Longevity

By Melinda Laubach-Hock, NIAR

While 1985 may feel recent to some Americans, the past 40 years have brought dramatic change. In 1985, median household income was just $23,620—about 30 percent of today's average—and a typical home cost a little over $100,000. MTV shaped pop culture with artists like Madonna, Prince, and Duran Duran, while films such as *Back to the Future* and *The Goonies* defined the era's cinema. The Nintendo Entertainment System had just introduced *Super Mario Bros.* and *The Legend of Zelda*, and home computers with dialup internet were still years away from becoming common. Ronald Reagan was president, and the United States remained deeply engaged in the Cold War with the Soviet Union.

Born from Cold War requirements, the B-1 Lancer was originally designed as a strategic nuclear bomber with greater payload, range, survivability, and penetration capability than the B-52. Initially envisioned in the 1960s as a platform combining the Mach 2 speed of the B-58 with the range and payload of the B-52, the B-1A program began in 1969 and flew its first prototype in 1974 before being cancelled in 1977 due to cost. The bomber was resurrected in 1981 as the B-1B, redesigned for Mach 1.25 performance, reduced radar signature, and low-level penetration. Its nuclear mission ended in 1994, after which the B-1 transitioned to a conventional bombing and precision-strike role.

The B-1 debuted in combat in 1998 during Operation Desert Fox. In Operation Enduring Freedom, the B-1 flew 2 percent of all sorties while dropping over 40 percent of the precision weapons in theatre. The mission versatility and high sortie numbers required to support Desert Fox, Allied Force, Iraqi Freedom, Enduring Freedom, and Inherent Resolve resulted in the fleet quickly accumulating more flight hours than anticipated, accelerating the need to extend the original certified test life earlier than expected and creating a spike in maintenance and repairs needed to support the desired operational life of the fleet.

After two decades of intense combat operations, 17 aircraft were divested in FY21, reducing the fleet size to 45 aircraft. The planned fleet retirement date has fluctuated over the past decade from near-term to decades in the future based

on the operational timeline for the B-21 Raider, challenges in existing bomber fleets, and the heightened global demand for bombers. The B-1 bomber's evolution over the last 40 years is a testament to its adaptability and strategic importance.

NIAR transported aircraft 85-0092 from the Aircraft Maintenance and Regeneration Group (AMARG) in Tucson, AZ, to NIAR's facility in Wichita to support the B-1 Lancer's digital engineering transformation. (NIAR photo by Melinda Laubach-Hock.)

For those maintaining weapons systems of this era, 1985 seems much further in the past. Part shortages, obsolescence, diminishing manufacturing sources, depot delays, unexpected structural repairs, and heavy unscheduled maintenance—combined with a shrinking pool of experienced personnel—have all contributed to lower-than-desired readiness levels. To keep this generation of weapons systems viable for decades to come, rapid modernization and modern engineering practices are essential. In response, the B-1 System Program Office (SPO) shifted its sustainment and modernization approach by infusing modern technology to generate a contemporary, government-owned technical baseline for the aircraft and by partnering with nontraditional contractors to strengthen and augment existing support.

Development of B-1 Digital Toolset

In late 2019, the B-1 SPO launched an initiative with Wichita State University's National Institute for Aviation Research (NIAR), leveraging a flexible contracting strategy through NCMS, to support the B-1 Lancer's digital engineering transformation. This relationship enables the B-1 SPO to rapidly shift priorities as warfighter needs evolve. The baseline digital twin program included the construction of a geometrical twin, a global finite element model (GFEM), and a contemporary set of external loads.

To support the program, NIAR transported aircraft 85-0092 from the Aircraft Maintenance and Regeneration Group in May 2020 to augment, complete, or clarify two-dimensional engineering drawings required to build the geometric digital twin. The aircraft was surgically disassembled, 3D scanned throughout the teardown process and at the detail part level, and inspected to determine aircraft condition. For parts with sufficient supporting technical data, digital 3D manufacturing quality models were generated to support future part procurement. The models were managed by a commercially available product lifecycle management (PLM) tool, Dassault Systems 3D Experience Platform. Next, an airframe GFEM was created and validated against government-owned full-scale test data to ensure the digital twin accurately replicated real structural behavior under load. The team also created engineering models to reverse-engineer external loads—the forces acting on the airframe in flight—and validated them using legacy reports, wind-tunnel data, a flight simulator, and historical flight-test results.

The resulting modern structural-analysis tool suite has enabled the B-1 SPO to proactively plan fleet repairs, assess how mission changes affect inspection requirements, and rapidly design fixes for atypical damage—without the excessive conservatism built into 1980s engineering methods. The value of this investment became clear in late 2022, when Dyess Air Force Base (AFB) requested a repair for a B-1 with buckled skins on both sides of the aft fuselage. Material testing revealed a 20–30 percent loss in strength. Under traditional analysis, the aircraft would have required a 12-month temporary field repair, a onetime ferry flight to depot, removal of the temporary fix, and installation of a semipermanent repair—an estimated two-year path to full operational capability.

Dissatisfied with the traditional repair timeline, the SPO turned to the modern toolset—still in development—and asked NIAR engineers to explore alternative solutions. Based on their analysis, in seven weeks the SPO issued flight restrictions that allowed the aircraft to be safely ferried to Tinker AFB for depot repair without any prior field repair. Using the new tools, engineers at NIAR

developed fourteen localized repairs in four months that were conducted at depot. This alternative approach reduced the return-to-service timeline from two years to less than one, improving mission readiness and reducing cost by eliminating unnecessary field repairs.

Expanding B-1 Longevity

The unique combination of the NIAR digital twin team's specific B-1 experience and commercial airframe modification capabilities spurred another opportunity in late 2023 for NIAR to support fleet longevity. The joint Air Force and NIAR BackBONE program has involved prototyping the replacement of a 33-foot section of the upper fuselage just in front of the wings on a retired airframe and validating the repair on at least one in-service aircraft. To meet the 12-month repair goal of the operational jet, removal of the old structure and fabrication of the new panel, tailored to each aircraft to account for original manufacturing variability, needed to occur in parallel. This requirement created challenges that were quickly identified and mitigated by the team.

As structure was removed, the aircraft could not shift even slightly, or the new panel would not fit. The GFEM was used to develop an internal and external shoring scheme balanced to prevent aircraft movement and allow access to perform the repair. Tight tolerance metrology methods were developed and tested by the NIAR team to translate the location of structural members on aircraft to the tool, creating a custom panel tailored to the specific geometry of each aircraft. Environmental control of the repair was also critical due to the different materials used to construct the panel. Climate control of +/-3°F had to be maintained, so NIAR developed climate monitoring processes to assess operational effects like opening the hangar door.

The team also analyzed the assembly process to determine the right balance between building the custom panel on the tool and completing final assembly on the aircraft. While parallel work shortened the schedule, it increased fit-up risk; so the team carefully managed that tradeoff. They also focused on minimizing repair-induced damage, which can be one of the biggest drivers of schedule and cost risk.

NIAR developed engineering tools to support the repair process and successfully completed preliminary design review (PDR) on November 6, 2024. As a result, the retired aircraft completed its final repair customer audit on September 9, 2025, and its critical design review (CDR) on September 5, 2025. Aircraft 86-0117, an operational aircraft, landed at McConnell AFB on September 9, 2025 to begin the validation effort.

Building New B-1 Capabilities

To support weapons integration, NIAR developed a partnership with the Air Force Seek Eagle Office (AFSEO), demonstrating a proven methodology of performing engineering analysis. The trusted relationship was developed by NIAR performing blind analysis tasks, including internal and external weapons release trajectories, which built confidence in NIAR's ability to perform the AFSEO process using the AFSEO toolset. These results were later compared to AFSEO analysis and flight test data and were determined to be comparable. With AFSEO's limited resources and competing demands across multiple weapons systems, the formation of this trusted relationship to add engineering capacity was crucial to the B-1 SPO's ability to integrate new capabilities in line with warfighter requirements.

Recently, the hypersonic missile testing mission was shifted from the B-52 to the B-1, requiring reactivation of the B-1's long-dormant external hard points and integration of Boeing's Load Adaptable Modular (LAM) pylon. Integration of external pylons would boost its weapon capacity by nearly 50 percent and enable integration of additional future weapons. To accomplish this goal while accelerating flight testing and fielding, the B-1 SPO split responsibilities between Boeing and NIAR, entrusting Boeing with the pylon development and certification and NIAR with analysis of the integration's effects on the airframe and airworthiness.

The B-1 program history is a story of rebirth, adaptation, and resilience, showcasing the Air Force's ability to reinvent and extend the useful life of high-value assets. Its journey from a cancelled program to a combat-tested asset is a remarkable story of innovation and foresight. The future viability of the B-1 fleet and its mission can also be attributed to a willingness to "think differently" about sustainment and modernization—pursuing innovative approaches that cut through long-standing roadblocks by strategically integrating new technology and augmenting engineering manpower as required to meet the warfighter's evolving requirements.

Editor's Note: This article is Distribution Statement A. Approved for public release via AFLCM-2026-0140. ■

Initiative Expands Zero-Trust Data Fabric in the Air Force

A CTMA collaboration between the Air Force Sustainment Center (AFSC) and multiple industry partners is expanding zero-trust data fabric in the Air Force. Zero-trust data fabric transforms cybersecurity and data-management with an approach that boils down to a "never trust, always verify" mindset. This approach creates a secure environment for data across distributed environments by applying strict, continuous authentication to every user, device, network, and service.

A member of the 179th Cyberspace Wing of the Ohio Air National Guard assesses connectivity for equipment serving the unit's cyber operations. (Air National Guard photo by Tech. Sgt. Alexis Wade.)

Across the DoW, establishing a zero-trust framework is a top priority, and the Air Force is focused on full zero-trust integration by fiscal year 2027. A recent CTMA initiative established a federated zero-trust data fabric ecosystem and demonstrated its utility with the Air Force Product Lifecycle Management (AF-PLM) system, which manages the data representing the entire life cycle of weapon systems and equipment—from design and manufacturing to maintenance and retirement.

Before this project began, the Air Force Research Laboratory (ARFL) had already established TITAN (Trusted Intelligence for Technology, Analytics, and Networks). This CTMA project matured TITAN's data fabric and zero-trust capabilities.

"When zero-trust data fabric was formalized through the Air Force Sustainment (AFSC) portfolio management process, it became TITAN, which is the infrastructure, the hosting environment, in which applications are deployed," Brian Bendele, Contractor Program Manager for XR Defense, said.

TITAN is an AFSC collaborative IL5 enterprise operating environment hosted in the AWS GovCloud. This ecosystem provides a common secure access layer and zero-trust-aligned identity and access management, which offers shared cyber and audit services, governed data operations, and a reusable application platform on which mission capabilities can be deployed. The TITAN platform continues to mature as a shared environment for sustainment analytics, digital engineering, and application delivery across multiple applications within a common IL5 boundary.

XR Defense implemented the zero-trust data fabric architecture and stood up the first application, the Data Science and Analytics Self-Service Suite (DSASS), which gave the Air Force a secure environment in which to start working on data analytics. This is an IL5 AWS GovCloud environment aligned to NIST SP 800-53 Rev. 5 and zero-trust practices.

"We were behind the scenes building out the platform with the zero-trust architecture," Bendele said. "We made sure users could authenticate into the environment and that we could log, monitor, and audit users from login to logout, which included all things compute and store, cybersecurity, and establishing a change request process with a change control board. We got our full ATO (Authority to Operate) in June 2025."

After the TITAN platform was established, deployed, and maturing, the team executed multiple operational use cases, including a Bills of Material (BOM360) use case. BOM360 offers a comprehensive, holistic perspective on all data related to a specific Bill of Materials (BOM) within a weapon system and its related supply chain. It provides a complete view of component details, relationships, life cycle information, supplier information, cost data, quality and compliance, usage history, and analytics and

visualization. A 360 view of BOMs is crucial for advanced analytics tools that facilitate better risk assessment, decision-making, supply chain resilience, efficiency, and cost-effectiveness.

For the BOM360, the team developed zero-trust controls and policies, a secure data exchange protocol, a data governance framework, and access controls. Furthermore, the team integrated data from various sources, including Air Force Product Lifecycle Management (AF-PLM), and then applied advanced analytics, AI/ML, and visualization to uncover patterns, trends, and insights. The BOM360 use case successfully provided real-time visibility, predictive analytics, and informed decision-making capabilities to the Air Force's supply chain stakeholders.

Concurrently, the team successfully completed a modeling and simulation use case called the Virtual Test Stand (VTS). The VTS aimed to speed up testing for vibration, shock, thermal, and electromagnetic compatibility. Physical testing requires extensive time and resources, typically between 18 and 24 months.

Under the NCMS effort, Altair Engineering, now part of Siemens Digital Industries Software, led development and validation of the VTS methodology for legacy printed circuit board (PCB) sustainment. David Coates, Siemens, Business Development, oversaw the team that demonstrated the software for this use case.

"The Air Force has a considerable number of electrical components that are obsolete, meaning the only parts they have are on the aircraft. Without a supply base of spare parts, they need to reverse engineer those components," Coates said. "The problem is it takes 18-24 months for the reverse engineering process. They were looking for technology to reduce that time frame."

The team focused on two military standards: MIL-STD 810 and 461. "We aligned those physical tests with our modeling and simulation tools, the VTS software suite," Coates said. "We subcontracted out physical testing, ran the simulations, and compared the results. We were 100 percent accurate in terms of predicting pass or fail of those tests. What that said was the Air Force could leverage our technology to get the validation timeline reduced, minimize the number of physical tests, and most importantly reduce re-spin, which is going through a physical test regimen only to find out that it failed and they would have to circle back and start the validation process all over again. The VTS tool stack can be used to identify risk going into the testing to make a better-informed decision on whether to run the test or put provisions in place to increase the chances of passing the test."

The use of the VTS successfully demonstrated and validated predicted pass-fail test results across MIL-STD 810 and MIL-STD-461 test requirements, reducing the validation timeline by at least 40 percent. Currently, the Siemens team is in the process of training the Air Force on the VTS tool stack. The success of this project is leading to more phases to continue the work.

The use of the VTS successfully demonstrated and validated predicted pass-fail test results across MIL-STD 810 and MIL-STD-461 test requirements, reducing the validation timeline by at least 40 percent.

"We've seen a lot of maturity in the technology," Bendele said. "All this happened because of the NCMS statement of work and objectives. In accomplishing those objectives, we matured the platform, the technology, and the zero-trust architecture. Getting the ATO allowed us to interoperate with the software vendors to work on use cases. It's turned into follow-on work."

The relationships built in the collaboration were instrumental to its success.

"There's been some really good industry interaction with the NCMS team, which will allow us to continue to improve the technology," Bendele said.

Coates added, "The working relationships we built with NCMS and the XR Defense team will last for years."

Future extensions of this work will focus on continued modeling and simulation-based qualification processes to enable accelerated equipment certification, enhancing Air Force Materiel Command readiness, increasing supply chain resilience, and reducing sustainment costs across the enterprise. The platforms, software, and lessons learned from this project can be applied in multiple commercial contexts—manufacturing, supply chain management, energy, and more—to eliminate data silos, provide secure data management, ensure regulatory compliance, and reduce risk. ■

New CTMA Final Reports

Every quarter, the CTMA Program releases to the public the most recent final reports for completed CTMA projects. See below for highlights of some of the latest releases, which are all linked to their project summaries posted on the NCMS website. To see more final reports for CTMA projects, please visit: https://ncms.org/ctma-projects/.

Airless Tire Technology – Phase I-IV
This CTMA project developed a scalable, airless (non-pneumatic) tire with the same performance characteristics as an air-filled tire, but not subject to loss of air pressure. Understanding and documenting the parameters for airless tire technology development will allow for scalable development for current vehicle sustainment platforms used by the general public, commercial industry, and the DoW to provide improved maintenance and sustainment cost solutions. See Report

Corrosion Detection Under Coatings – Phase II
Coatings designed to prevent corrosion are effective only as long as the coating's integrity is maintained. This project advanced a method to detect potential coating failures and hidden corrosion, which has significant benefit to the general public. These nondestructive inspection techniques are broadly applicable to systems employed in civilian infrastructure applications such as bridges, building architectures, pipelines, chemical processing plants and oil/gas exploration. See Report

Development of Critical Arctic Initiatives that Impact Maintenance and Sustainment Endeavors – Hypothermia Active Warming System (HAWS)
Areas affected by variable and hostile weather conditions, such as the Arctic, are becoming increasingly occupied by maintainers who need the proper shelter and equipment to work safely in difficult conditions. This initiative developed and tested equipment that provides improved functionality and addresses areas of concern for the improved maintenance and sustainment of equipment and personnel in the Arctic. See Report

Dual-Use Technologies for Highly Electrified Vehicles to Reduce Maintenance and Sustainment Activities
The need exists for a DC/AC power converter that is two-man liftable and networkable. This dual use includes systems that can have value for the trucking industry as well as homeland defense/disaster recovery where quick restoration of electrical power is needed. This project demonstrated dual-use technology application on the Medium Tactical Vehicle Replacement (MTVR) platform

The project team for a CTMA initiative, Expeditionary Ship Repair Innovation, utilized the the USS Turner Joy—a Vietnam War-era destroyer that is moored pierside as a museum ship in Bermerton, WA—to test the capabilities of a UAV to collect high-quality imagery and video for damage assessment. (US Navy photo by Mass Communication Specialist 2nd Class David C. Fines.)

as a surrogate for other organizations facing similar challenges with power generation and distribution in remote locations. See Report

Expansion of a Cross-Operational ERP for the Maintenance and Securement of Organizational Resilience
This project utilized the Mission Analysis Readiness Resource Synchronization (MARRS) platform as a test bed for national level service support programs to enable a common operational framework for service-member and family support programs. This work will provide a secure sharing mechanism of cross-operational information, better service utilization and streamlined productivity. See Report

Expeditionary Ship Repair Innovation
By integrating commercial unmanned aerial vehicles (UAVs), remotely operated vehicles (ROVs), and advanced data analysis software, this project tested and assessed expeditionary maritime repair and sustainment technologies and processes. The overall goal was to establish ways to maximize the time a vessel is operational and minimize the time needed to complete maintenance in repair facilities at shipyards. See Report

Exploration of Novel Technologies to Reduce Lifecycle Maintenance Costs – Phase VI
The project addressed the need to rapidly identify and validate metal alloys suitable for cold spray, a solid-state deposition process where metal particles impact and adhere without melting. The work surfaced new, high-capability coating candidates for weapons systems in extreme environments. The team also demonstrated an accelerated, data-informed pathway to screen and validate cold-spray alloys. See Report

Improved Hardware Sustainment through Solid State Additive Manufacturing Development – Phase I & II
Maintenance and sustainment of DoW hardware extends well beyond life extension of a platform or system. This includes keeping a vehicle or part in service longer between maintenance intervals and also includes reducing repair timelines. Processes like Solid State Additive Manufacturing (SSAM) are being developed for maintenance and sustainment of critical and costly components. This effort addressed the current limitations of SSAM by expanding to a broader set of materials and developing the hardware needed to apply those materials to critical high-cost items across industry. See Report

Improving Maintenance of Intelligent Robotic Systems through Modular Designs – Phase II
Enabling legged robots to walk and run dynamically and efficiently has faced challenges in control and stability analysis, as well as maintaining the components that take most of the wear and tear. This project sought to streamline the process of designing and developing modular robotic systems and components. These new processes and technologies can be utilized to reduce repair times, improve repair quality, and reduce accidents. See Report

Innovative Small Form Factor Auxiliary Power Units – Phase III
Small innovative auxiliary power units that utilize modern engine architectures and high-efficiency power generation systems are an effective tool in countering the negative effects that new, weighty onboard technologies may have on legacy platforms. The project was successful in building and demonstrating a variable speed hybrid power generation system, reducing size, weight, and fuel consumption for legacy vehicles. See Report

Inspection and Fractographic Analysis to Develop a Digital Twin for a Legacy Aircraft – Phases I-V
This initiative used the B-1 as a testbed to address how to create detailed digital twins for legacy aircraft where much of the requisite technical data was missing. During these first five phases of the initiative, the team acquired physical airframe structures, began removing individual parts from the airframes, then inspecting and scanning them. Development and validation of the digital twin included the structural frame and the system components. See Report

Visualizing and Reporting for Analyzing Any Scale Data (VRAASD) – Phases I-VI
Over the course of the project, the VRAASD team developed and deployed a comprehensive suite of digital tools and resources supporting Defense Logistic Agency Aviation's acquisition and sustainment operations. This included more than 679 standardized local operating procedures (LOPs), 14 AI-enhanced interactive training modules, and 91 educational and promotional videos tailored to both internal staff and external vendor audiences. See Report ■

CTMA Partners Meeting and Technology Competition Awards Set for September in Jacksonville, Florida

Jacksonville, Florida will welcome the 2026 Commercial Technologies for Maintenance Activities (CTMA) Partners Meeting and CTMA Technology Competition Awards this September 22–24, to be held at the Hyatt Regency Jacksonville Riverfront. After a one-year hiatus, this unique event will be more action-packed than ever, designed for maintenance and sustainment professionals to share ideas, develop new partnerships, and learn about DoW sustainment goals.

Jacksonville, FL will host the CTMA Partners Meeting this September 22–24.

"The CTMA Partners Meeting is NCMS's premier event as well as a one-of-a-kind opportunity that brings government, academic, and industry partners together to highlight and understand the maintenance and sustainment needs of the warfighter," said Jennifer Khoury, NCMS Industry Liaison Manager. "This is an exceptional chance for those interested in showcasing their technology solutions in front of leaders and key decision-makers throughout the DoW."

Keynote speakers for this year's event will be Patrick N. Kelleher, Deputy Assistant Secretary of War for Materiel Readiness, and Dr. Vic S. Ramdass, Principal Deputy Assistant Secretary of War for Industrial Base Policy. Additional sustainment leaders in government, industry, and academia will speak, moderate panel discussions, and present CTMA project success stories for attendees. In celebration of NCMS's 40th anniversary, a special member reception will be held to highlight NCMS member contributions and their overall impact on NCMS's success. The event will also see the return of the exhibit hall receptions, which offer many opportunities for industry and academic partners to display next-generation capabilities for DoW decision-makers.

Live CTMA Technology Awards

Additionally, NCMS is once again proud to host the CTMA Technology Competition's finalist presentations and awards. This annual competition offers an exceptional opportunity for industry, academic, and government participants to get their latest and greatest innovations in front of key DoW leadership and decision-makers. Participants are given a unique platform to present cutting-edge approaches that address real-world sustainment challenges, ranging from advanced manufacturing and repair technologies to predictive maintenance, digital engineering, corrosion mitigation, and supply chain resilience. Submissions are evaluated through a rigorous review process led by senior DoW maintenance and sustainment leaders, ensuring that selected technologies are not only innovative, but also relevant and aligned with current and future operational needs. This direct engagement with decision-makers provides entrants with meaningful visibility and the potential to transition their solutions into operational environments through follow-on CTMA projects or other partnership mechanisms.

Three finalists will give live presentations to the judges and conference attendees at the 2026 CTMA Partners Meeting. The judges will select a winning technology whose organization will receive $100,000 in support funding toward a future demonstration project.

The entry submission period is currently open and will close on Monday, June 22.

For more information on the CTMA Partners Meeting or to RSVP for the event, visit https://ncms.org/events/2026-ctma-partners-meeting/. For more information on the CTMA Technology Competition or to enter your technology solution, visit https://ncms.org/ctma-technology-competition. ■

Coast Guard to Host First-Ever NCMS Event at ALC in June

NCMS is excited to host the Aviation Logistics Center (ALC) Modernization and Sustainment Accelerator from June 16 to 18, 2026 in Elizabeth City, NC, as part of the organization's first collaboration with the US Coast Guard. As the sole depot-level maintenance complex for Coast Guard aviation, ALC provides teardown, inspection, repair, engineering, procurement, supply support, and logistics information systems to all Coast Guard aviation assets. The Coast Guard is being resourced at unprecedented levels and has been challenged to rapidly modernize aviation systems and processes for sustaining readiness. This Modernization and Sustainment Accelerator will work toward achieving those goals.

The Coast Guard Aviation Logistics Center in Elizabeth City, NC will host an NCMS Sustainment Accelerator on June 16-18.

This flagship event will feature a one-of-a-kind event schedule with multiple opportunities to put industry in direct communication with base personnel. On the first day, exhibitors will tour the base to learn about ALC's mission and operations. They will then meet with subject matter experts (SMEs) for their particular technology focus areas, where SME panelists will discuss ALC capabilities, problem sets, immediate needs, and take questions. The remainder of the event will be held on base, ensuring the maximum number of base personnel are able to attend.

To see a directory of exhibitors, visit: https://ncms.org/events/aviation-logistics-center-alc-modernization-and-sustainment-accelerator#directory. ■

NCMS to Host Sustainment Accelerator with PSNS in August

NCMS will once again be heading to Bremerton, WA, to host a Sustainment Accelerator in partnership with Puget Sound Naval Shipyard & Intermediate Maintenance Facility (PSNS & IMF). The event will take place at the Kitsap Conference Center from August 25 to 27, 2026. PSNS & IMF is the Pacific Northwest's largest Naval shore facility and one of Washington State's largest industrial installations.

This event offers a collaborative setting for industry and academic exhibitors to meet with key Navy decision-makers and showcase their technology solutions capable of supporting maintenance and sustainment for US Naval shipbuilding. While all technology focus areas are welcome, PSNS & IMF has provided a list of specific innovative maintenance and sustainment technologies that personnel are especially interested in seeing:

Advanced Manufacturing & Automation:
- Automation Technologies
- Machining & Tooling

Digitalization & Smart Technologies:
- 3D Scanning & Metrology

Environmental, Health & Safety:
- Confined Spaces Monitoring System
- Human Augmentation

Fiber Optics:
- Splicing

Inspection & Quality Control
- Circuit Analysis Test Equipment

Maintenance & Reliability:
- Non-Destructive Testing and Inspection Technologies
- System Isolation & Tagout

Naval Specialization:
- Welding Solutions

Unmanned Systems:
- Blue UAS Aerial Drones
- Surface/Land Unmanned Systems

For more information about the upcoming Puget Sound Sustainment Accelerator, visit https://ncms.org/events/sustainment-accelerator-puget-naval-shipyard/. ■

GrayMatter Robotics

GrayMatter Robotics (GMR) is an AI manufacturing solutions company headquartered in Carson, California, building the Physical AI systems that power the autonomous factories of the future. Founded in 2020, GMR deploys autonomous robotic manufacturing cells that handle complex, high-mix surface preparation, coating, and inspection processes across some of the most demanding production environments in the world. From fire trucks to fighter jets, GMR helps the manufacturers who keep America operational to build faster, run leaner, and stay ready.

GMR has earned recognition across the defense manufacturing sector, including a win in the US Navy's Advanced Manufacturing Innovation for Maritime Readiness Challenge and active Small Business Innovation Research (SBIR) programs with the US Air Force. In April 2026, GMR signed a memorandum of understanding with Huntington Ingalls Industries (HII), the nation's largest military shipbuilder, to advance robotic surface preparation and coating automation for shipyard maintenance, repair, and overhaul (MRO) operations—directly supporting US Naval readiness.

At the core of GMR's technology is Factory SuperIntelligence—an AI architecture built for the physical world, combining proprietary AI models, domain agents, and process optimization to deliver rapid deployment and reconfiguration across factories. GMR's solutions deliver up to 12x the throughput of skilled manual labor and a 95 percent reduction in rework, with an air-gapped, edge-deployed architecture that ensures full data sovereignty for defense and enterprise-critical operations. To date, GMR has processed over 30 million square feet of surface area across 20+ industries. GMR offers six core automation capabilities:

- Scan&Sand™ automates sanding operations on irregular surfaces
- Scan&Grind™ automates weld seam removal, burr elimination, and material blending on complex metal geometries
- Scan&Blast™ delivers robotic abrasive blasting for coating removal and surface preparation
- Scan&Buff™ automates polishing and buffing operations
- Scan&Spray™ applies coatings with robotic precision
- Scan&Inspect™ integrates automated surface inspection into the finishing workflow

To see GrayMatter's full profile, visit: https://ncms.org/news/graymatter-robotics-member-spotlight/.

Phoenix Group of Virginia

Phoenix Group of Virginia, a small business headquartered in Chesapeake, Virginia, proudly joins the NCMS member base. Phoenix Group of Virginia is a dedicated partner in advancing manufacturing and sustainment solutions for the DoW. With deep roots in naval operations, engineering, and logistics, Phoenix Group delivers innovative professional services, program management, damage control systems, and custom technical solutions that enhance readiness and mission success.

Their experienced leadership team—drawing on over a century of combined DoW, government, and commercial expertise—specializes in areas such as shipboard systems, operational support, and process optimization, enabling warfighters and first responders to focus on the mission while Phoenix handles the behind-the-scenes complexities.

As a trusted provider, Phoenix Group brings a commitment to innovation, integrity, and unparalleled customer visibility to collaborative projects. Their tailored approaches in logistics, engineering support, and emerging technologies align seamlessly with CTMA's focus on commercial technologies for maintenance and sustainment, promising valuable contributions to cost-effective, high-impact solutions across the defense industrial base. Phoenix Group of Virginia is poised to rise to every challenge and deliver results that strengthen our nation's capabilities.

To see Phoenix Group's full profile, visit: https://ncms.org/news/phoenix-group-of-virginia-member-spotlight/. ■