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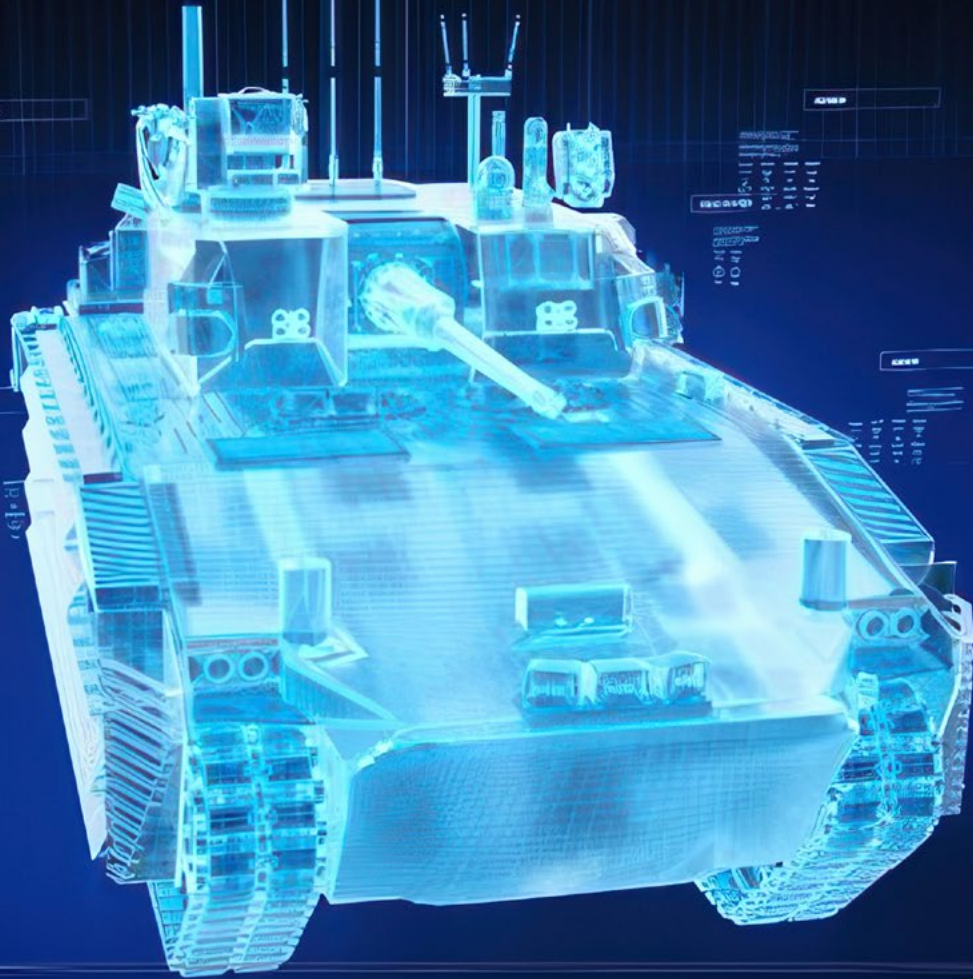
FALL 2025

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UPCOMING EVENTS

September 29, 2025
2025 Maintenance Innovation Challenge - Entries Due

December 9 - 12, 2025
DOD Maintenance Symposium
Louisville, KY

January 20 - 22, 2026
NCMS Sustainment Accelerator: Pearl Harbor
Honolulu, HI

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. Don't hesitate to email eventsupport@ncms.org with any questions.

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 DOD 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 DOD-wide program focused solely on maintenance and sustainment.

A Tribute to Steve Morani

The CTMA Program staff—on behalf of the entire NCMS organization—would like to warmly thank Steve Morani, Acting Assistant Secretary of Defense for Sustainment, for his leadership and expertise throughout his years of military and civil service.

In October 2020, Morani—a long-time supporter of the CTMA Program—took on the role of Assistant Secretary of Defense for Sustainment. Additionally, Morani was a member of the Senior Executive Service and previously served as the Director of Logistics, Air Force Sustainment Center at Tinker Air Force Base, Oklahoma.

"Steve's leadership, integrity, and unwavering commitment to the Department of Defense has left a legacy that will continue to serve and inspire long after his well-earned retirement," said Debbie Lilu, EVP, MX and Sustainment, Business Development. "We thank Steve for his dedication to safeguarding our nation and empowering those who serve it. NCMS appreciates everything Steve has done to support our mission and the CTMA Program."

Starting from the shop floor in the US Air Force before ascending to the top echelon of the DOD provided Morani with a unique perspective as he worked to develop the Department's overarching materiel readiness strategy and priorities. This also gave him an unparalleled understanding of the DOD's maintenance challenges and the needs of stakeholders at all levels.

"Steve is the embodiment of great leadership," said Greg Kilchenstein, NCMS Chief Technologist. "Having started as an enlisted HVAC mechanic and working his way up to the position of performing the duties of the Undersecretary for Acquisition and Logistics, Steve understands the depth, breadth, and complexities of maintenance and sustainment challenges facing the DOD and has the expertise and poise to collaboratively navigate to appropriate solution implementation."

Kilchenstein continued, "As a believer in innovation, Steve was an early adopter of the CTMA process during his stint as the J4 Director of Maintenance and was key to the success CTMA is enjoying as DOD's premier maintenance and sustainment change agent. Steve's legacy as leader, innovator, expert collaborator, and understated driving force will continue long after his retirement from OSD."

Orchestrating the maintenance and sustainment of a materiel enterprise this large and complicated was a monumental task. Morani's thorough understanding of this environment and his innovative, out-of-the-box thinking aligned well with the CTMA Program to drive the sustainment community forward. Throughout his time leading sustainment operations for the DOD, Morani worked tirelessly to enable the expansion of existing expertise, funds, and experience through collaboration. Morani has expertly positioned the DOD to be able to continue to meet warfighter needs.

"His leadership, selfless service, and mentorship impacted so many people," said Dana Sanford, Director for Sustainment Data and Technology Innovation, Office of the Deputy Assistant Secretary of Defense for Materiel Readiness. "Whether in uniform or as a civil servant, his steady and calm demeanor made people want to be around him and seek out his guidance. Mr. Morani is the embodiment of servant leadership. Though he moves on to a different chapter in his life, he has mentored and inspired a generation that will carry on his legacy." ∎

Representatives of Portsmouth Naval Shipyard install a state-of-the-art sensor kit in the shipyard's inside machine shop as part of a pilot program to collect data on equipment productive capacity, usage and maintenance. The effort is being funded under the Navy's Shipyard Infrastructure Optimization Program. (US Navy photo by Jim Cleveland.)

"Digital Sandbox" Improves Maintenance and Sustainment at Naval Shipyards

Optimized infrastructure is one of the primary objectives in NAVSEA's Strategic Plan 2030, which focuses on implementing digital solutions to enhance workforce effectiveness. A current CTMA collaboration is advancing infrastructure optimization at the four public shipyards: Norfolk, Portsmouth, Puget Sound, and Pearl Harbor.

The project brings together experts from NAVSEA, the Shipyard Infrastructure Optimization Program (SIOP) office, and Siemens Government Technologies (SGT) to standardize ship maintenance. Collaborating to identify common infrastructure, equipment, and procedures, the team is creating a NAVSEA shipyard enterprise plan for the four shipyards. Currently, the team has established a "digital sandbox," a cloud-hosted environment that serves as a proving ground for shipyards to develop digital shop floor work processes for designs, systems, and detailed work instructions.

"We started with the Puget Sound shipyard," said Larry Gnerer, Program Manager, Navy Programs, Siemens Government Technologies (SGT). "Then we will be engaging with the other shipyards."

The aim is to standardize processes across the shipyards, while taking into account each shipyard's unique needs.

"Each shipyard has specific equipment and classes of ships," said Nathan Boward, Project Manager, SGT. "We are considering the differences between shipyards as well."

The team established a cloud-hosted environment where industry and naval personnel can access the software.

"We have a development environment and a government environment where the government can come in, see the results of our agile sprints, and do testing," said Gnerer.

The team installed several Siemens software programs in both the development and government platforms: Teamcenter, NX, Opcenter Intelligence, and Opcenter APS. Teamcenter will support Navy personnel in managing planning, resources, and processes. NX will provide CAD and CAM solutions.

"Opcenter Intelligence is used for dashboarding and reporting," said Boward. "Opcenter APS (Advanced Planning and Scheduling) is an automated scheduling program that the shipyards will be able to utilize to help identify constraints in their schedule. For example, if someone calls in sick or a machine goes down, the shipyards will be able to work through courses of action very quickly to identify how to mitigate those issues."

The team is currently working on a list of processes that will be implemented in the software, starting at PSNS, then progressing to other shipyards. The digital sandbox will be used to import task group instructions and then author technical work documents and shop work instructions (SWIs) within this new environment. Longer term, the team plans to integrate the shop floor information system with an already existing digital model of the shipyards: the Shipyard Industrial Process Model. This integration will enable navy personnel to virtually simulate shipyard maintenance procedures.

The team is also developing a custom training program for shipyard personnel to learn the different types of software available in the digital sandbox.

"We have a team working on creating specific training for the shipyards based on individuals' roles, including planners, machinists, supervisors, mechanics, and engineers," said Boward. "We're in the process of developing custom training to provide to the customer, both in a web platform as well as in-person, instructor-led training. For each specific user role, the training will include how to navigate within the software to execute the workflow that's been created within the system."

Ultimately, this project is a stepping stone toward a larger goal: digitizing work instructions on the shop floor and tracking work on the shop floor at a more detailed level.

"Our plan is to connect all the different shops across the shipyard," said Boward. "The data will help us understand how long actions are taking in the workflow. We'll be able to better understand availability, locate bottlenecks, and optimize processes.

"With more accurate and comprehensive data coming off the shop floor, it will be possible to run scenarios within the SIPM," said Boward. "This will provide insights to the shipyards so they can better plan yard layouts and adjust their schedules and resources for upcoming availabilities."

The work done on this project can be leveraged for public benefit to improve and standardize maintenance in the commercial shipbuilding industry and in maintenance and repair facilities. Utilizing these state-of-the-art digital tools and visualizations will enable companies to enhance their maintenance processes. ∎
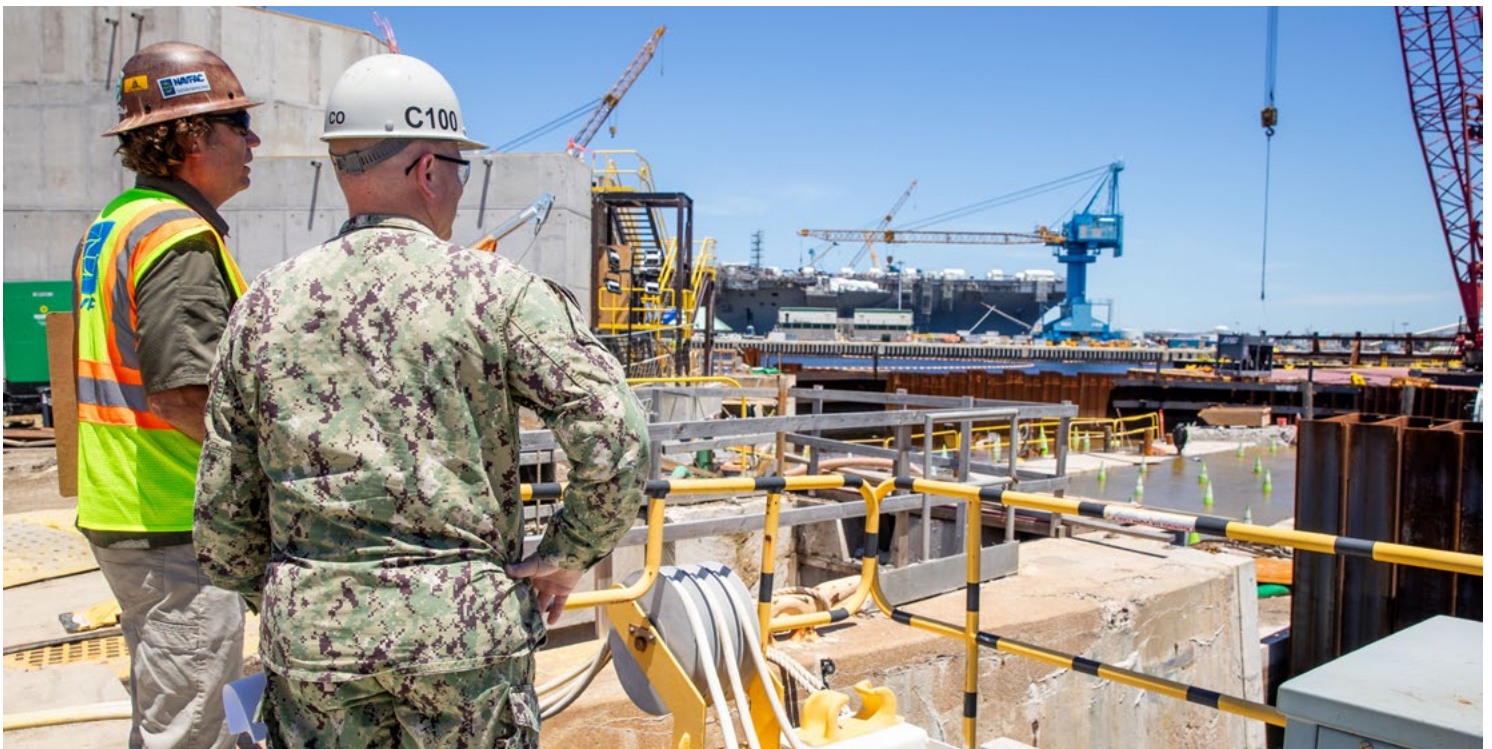
Norfolk Naval Shipyard Commander Captain Jip Mosman reviews progress on renovations to a carrier dry dock being conducted as part of the Navy's Shipyard Infrastructure Optimization Program. (US Navy photo by Shelby West.)

Collaboration Supports the Army's XM-30 and Delivers Workforce Training Programs on Digital Tools

The Army is undergoing a fundamental transformation in response to the evolving threats posed by near-peer competitors. According to the Army's Digital Transformation Strategy, "The Army must adapt a data-driven mindset and embrace digital transformation to successfully respond to the threat of great power competition and win decisively in a Large-Scale Combat Operations…. Specifically, the cloud is the foundation for this entire modernization effort." A current CTMA project is supporting the Army by providing a secure, multi-cloud digital ecosystem via the NCMS Digital Enterprise, which will enable the Army to safely collaborate with experts across industry and academia.

The focus of this effort is twofold:

- supporting the Army's production of a vehicle that is "born digital"

- developing the workforce designing future combat platforms

This CTMA initiative uses the Army's XM-30 Mechanized Infantry Combat Vehicle as a testbed, which is the Army's first ground combat vehicle designed using state-of-the-art digital engineering tools and techniques. By demonstrating techniques such as designing a digital twin of these combat platforms from the outset, the Army will benefit from configuration management, data provenance, and streamlined cloud-based collaboration, revolutionizing lifecycle management functions and improving fleet readiness. In addition to utilizing the NCMS Digital Enterprise to develop the future combat platforms, the CTMA project team is creating workforce training programs to support the Army's Digital Enterprise usages and help manufacturers adopt digital tools that deliver measurable gains in productivity, quality, and efficiency.

This CTMA collaboration brings together a team of experts from the US Army Ground Vehicle Sustainment Center (GVSC), the US Army Research Laboratory (ARL), and the US Army Command, Control, Communication, Computers, Cyber, Intelligence, Surveillance and Reconnaissance Center (C5ISR), along with the Connecticut Center for Advanced Technology (CCAT), the University of Maryland–Baltimore County (UMBC), and the University of Michigan–Dearborn.
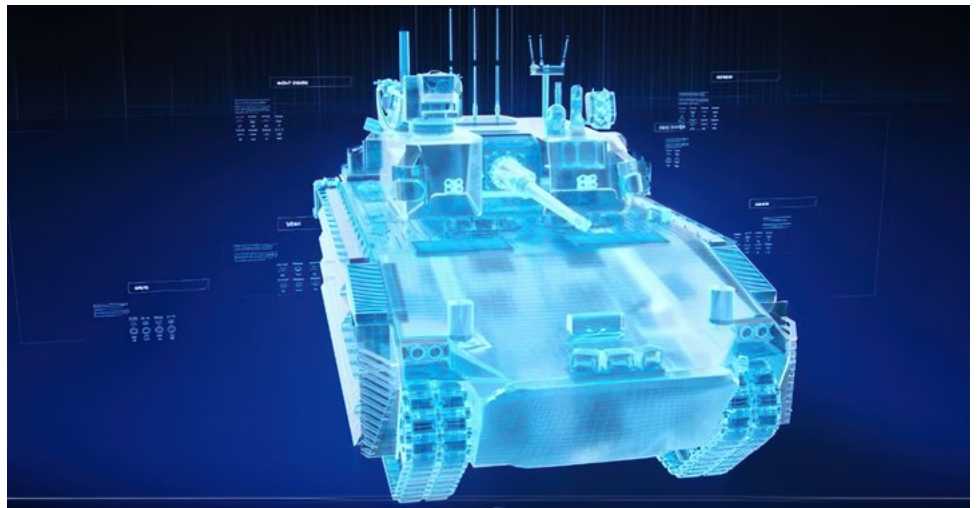
This photo displays a digital rendering of the US Army's future XM-30 Mechanized Infantry Combat Vehicle. (PEO Ground Combat Systems photo by Savannah Baldwin.)

CCAT is supporting manufacturers in employing model-based workflows—in effect, training manufacturers in how to work in the Army's preferred digital environment.

"CCAT is the voice of the manufacturer," said Matthew Sperzel, Program Manager, CCAT.

Nasir Mannan, Principal Engineer at CCAT and the technical lead on the project, said, "We look at the manufacturer's perspective. When a manufacturer receives a request from the DOD to produce a part, we focus on how quickly the part can be produced. Leveraging software reduces the lead time. At CCAT, we've been developing model-based workflows for saving time and costs, along with improving part quality."

The use of model-based workflows reduces the amount of labor required and increases efficiency.

"With digital technologies, model-based workflows allow for automation of production programming," said Mannan. "There are software systems that program machines. A person who used to operate one machine can now operate up to four different machines, so productivity increases. We have systems in place that can do most of the work or supervise the systems that otherwise a person would do. As a result, manufacturing companies can now produce two to four times the output that they used to produce."

In addition to yielding higher output, the use of model-based workflows saves time.

"Fully using model-based workflows can help reduce manufacturing programming time between 50 and 90 percent," said Mannan. "There is significant time saved in getting a quote out the door, and in getting a part manufactured, inspected, then delivered. The core value is the time savings in changing from a legacy workflow of receiving a 2D drawing and taking days to months to get a part out, versus a model-based workflow, where it takes hours. The value here is the automation of production programming."

CCAT's engineering team has developed two powerful, no-cost resources to support manufacturers' digital journeys:

• Automated Production Programming Workflows and Technical Learnings Playbook – a practical, step-by-step digital guide.

• Video Series: Automated Production & Digital Manufacturing Workflows – real-world demonstrations with actionable takeaways.

These resources demonstrate how model-based design (MBD), automation, and digital workflows can drive meaningful improvements across manufacturing operations.

"The on-demand, in-depth training videos are a resource that we recorded after we developed the model-based workflows," said Mannan. "These videos go step by step to explain how to use model-based workflows, utilizing specific software and middleware. The videos are specifically put together to train the folks who are supplying defense parts to make sure they are upskilled and able to fully leverage this kind of workflow. Two of the videos are use-case centric and focus on companies that have been ahead of the curve in adopting digital technologies into their manufacturing processes."
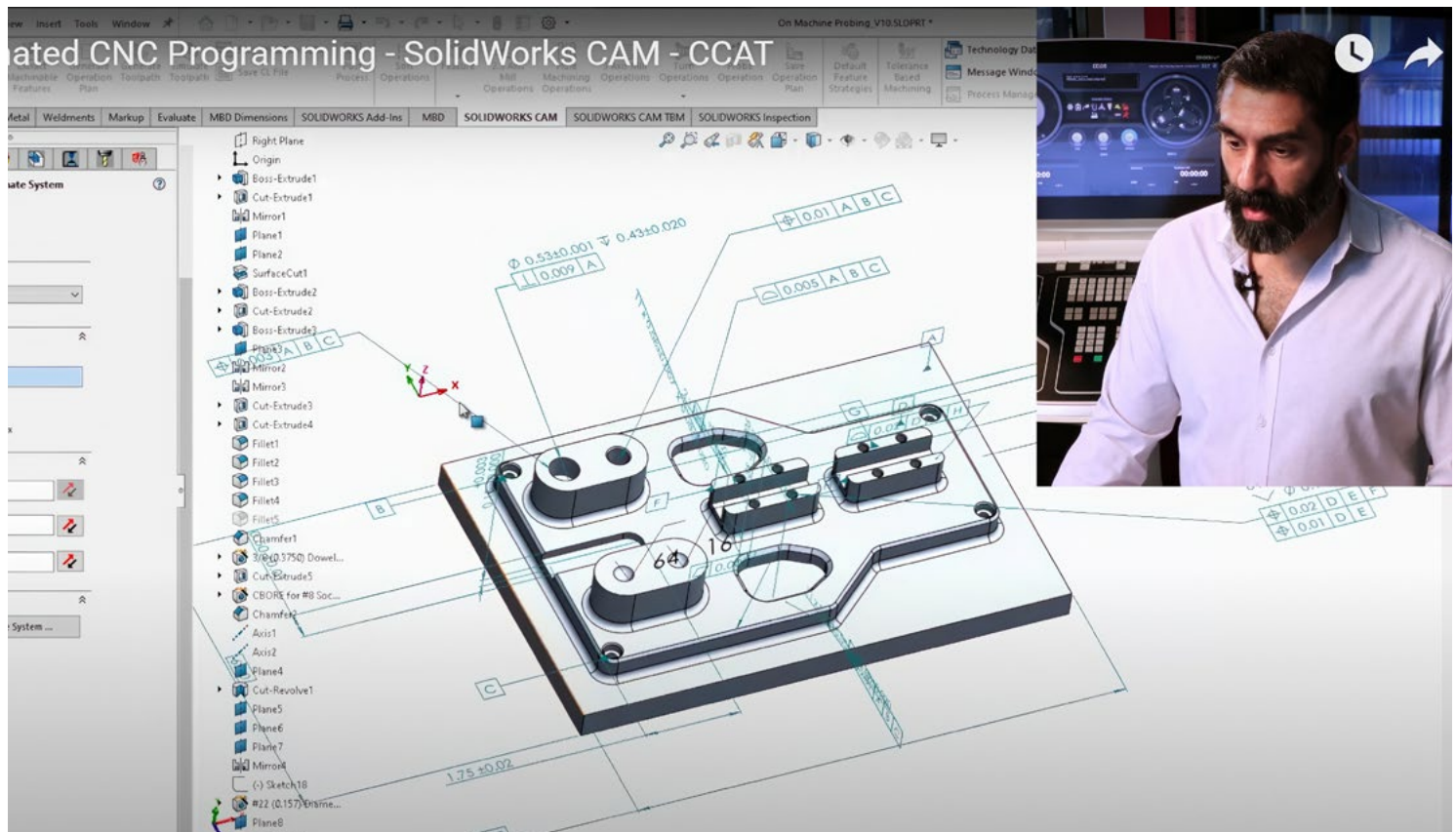
In this video screenshot, Nasir Mannan, Principal Engineer at CCAT, demonstrates how to use SolidWorks Computer-Aided Manufacturing (CAM) with MBD to automatically generate CNC programs. (Image courtesy of CCAT.)

The digital playbook that accompanies the training videos is designed to be both accessible and impactful—a practical tool to accelerate adoption, reduce risk, and improve consistency in maintenance, sustainment, and production environments.

"The digital playbook highlights all the training materials, compiles them in one place, and includes the links to all the instructional videos that we created for the betterment of the manufacturing community," said Sperzel.

As the project moves into its second phase, the team at CCAT will be standing up an autonomous cell to demonstrate how digital models, coupled with robotics, can quickly produce parts.

"The cell will incorporate autonomous mobile robots," said Mannan. "It will also use other types of technologies to bring stock material to machines, and to bring parts from one machine to another machine, which will further enable higher efficiency production."

The CCAT team will be highlighting a couple of workflows within that autonomous cell to create more workforce development videos.

Also in the second phase, the CCAT team will conduct user testing within the NCMS Digital Enterprise. "We will be partnering with a local manufacturer that will help us further develop and evaluate the technology adoption process and user experience," said Sperzel.

"We're also in the process of installing a digital twinning software for a manufacturing machine," said Mannan. "We will show how we can virtually verify a part using the digital twin of a physical machine prior to putting it onto the machine. This will demonstrate the digital thread workflows in the digital environment."

CCAT's user testing, workflow production material and autonomous cell development will feed into a scalable training model that will be developed and implemented in Phase II. This comprehensive training program, custom designed to the needs of the US Army, will produce Model-Based Definition (MBD) training modules for: High Level Awareness, Digital Design, Digital Manufacturing, Digital Quality Assurance, and Inspection through Creo and Windchill software systems. These training modules will be launched via an online training platform, accessible to all US Army teams and their suppliers.
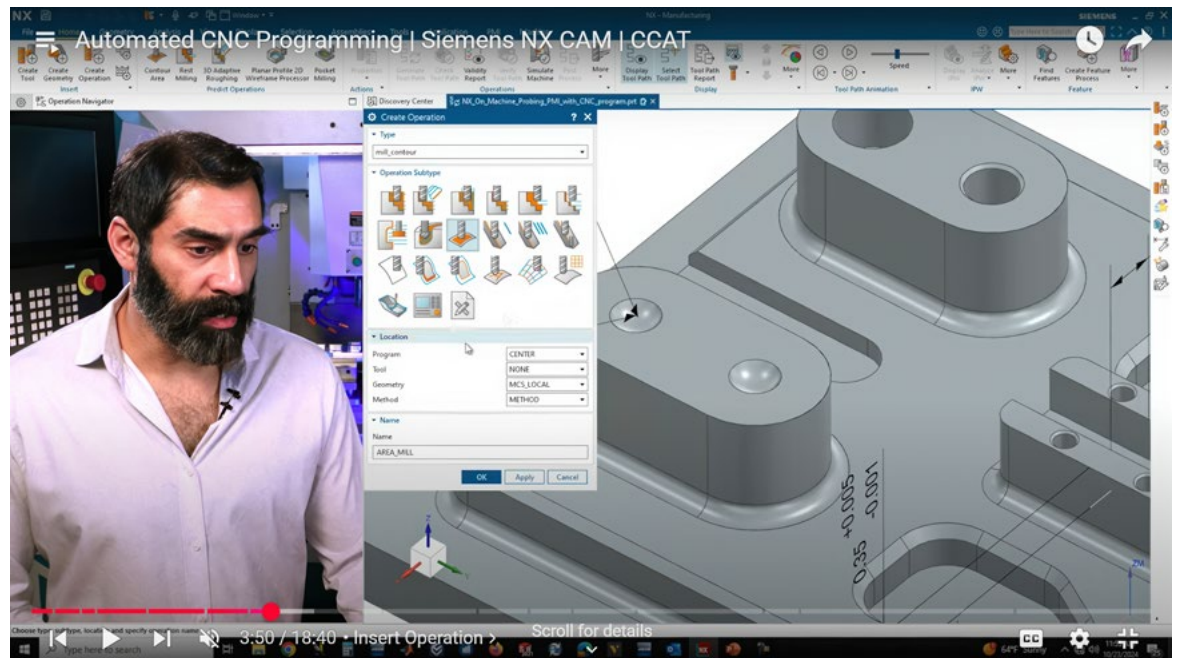
CCAT Principal Engineer Nasir Mannan discusses automated CNC programming in this screenshot from the video training series created by CCAT, Automated Production & Digital Manufacturing Workflows. (Image courtesy of CCAT.)

To learn more about CCAT's role in this CTMA project, and to view the playbook and video series, visit: https://www.ccat.us/news-insights/digital-mfg-resources.

Editor's Note: This article is Distribution Statement A. Approved for public release; distribution is unlimited; OPSEC9975. ∎

Cybernet Systems Develops Award-Winning Aircraft Inspection Tool

Kevin Tang, Research Engineer at Cybernet Systems, displays his company's award-winning solution, the NDT Tracker for Mobile C-Scan Generation. (NCMS photo by Ryan Burklow.)

An Interview with the 2025 CTMA Technology Competition Winner

The annual CTMA Technology Competition is a highly selective contest that identifies the most innovative maintenance and sustainment technologies relevant to DOD operations. This year's winning technology—NDT Tracker for Mobile C-Scan Generation, by Cybernet Systems Corporation—is a mobile non-destructive testing (NDT) tool linked to advanced software that greatly simplifies ultrasonic thickness grid inspection for aircraft structural components.

Cybernet Systems has been awarded $100,000 in project support funding. The funds will be applied to a selected DOD demonstration initiative, to the extent permitted under the existing CTMA cooperative agreement.

The CTMA Program recently sat down with Kevin Tang, Research Engineer at Cybernet Systems, to learn more about the winning technology and how it will improve aircraft inspections.

CTMA: The winning technology, NDT Tracker for Mobile C-Scan Generation, enables accurate semi-auto NDT for aircraft structural components. Can you tell us what is innovative about this technology, and how it is an

improvement on current methods?

Kevin Tang: As a safety requirement, all aircraft, in both the DOD and in the commercial airline industry, must undergo heavy maintenance, where inspectors potentially scan every part of the aircraft, using ultrasonic testing (UT), to make sure that the aircraft skin is still thick enough so that it's not going to suffer catastrophic failure.

The current process is that inspectors literally draw grids on paper or directly on the aircraft with cells the size of half an inch, sometimes a quarter inch, over large areas that can span several feet. Then, with handheld probes, they take a reading of each grid square. They look at their probe, look at their display, and write the measurement down in each tiny grid square. Then they go to the next one and do the same thing for hundreds, even thousands, of these grid cells.

It's painstaking work and I have huge respect for the inspectors. It's difficult to take the readings because the surface of aircraft is usually not flat, so the inspectors have to press down very hard to get the measurements. Sometimes, two inspectors are needed because one is taking the readings and then the other is writing the numbers on the grid paper.

This was a process that was ripe for innovation. As an engineer, I love being able to create things to help people, so it's been a dream problem. From the inspectors' perspective our solution is a no-brainer. They all say, "I need this tool." Maintenance, Repair, and Overhaul (MRO) of aircraft around the world use the UT grid method, so there is a great need for a better technique.

Our technology—the NDT Tracker for Mobile C-Scan Generation—automates the tracking and recording, so the inspectors don't have to do any manual gridding and recording. The way it works is that they set up a camera and it follows where the inspector's hand goes and takes the recording. The tool produces color maps that provide a view of the remaining thickness in each inspected area of the aircraft and are immediately available in PDF format.

Our technology makes many improvements over the old process. The NDT Tracker reduces the number of inspectors needed from two to one. It also makes the inspections faster, which reduces the labor hours. You get the most bang for your buck with larger areas, where the Tracker provides well over 50 percent in labor costs savings. The camera of the NDT Tracker is also great for tight spaces, and it can track inspections in even the smallest confined areas. In small spaces, labor costs are about 50 percent lower than the legacy method.

The huge ROI is the savings of aircraft hangar days. Using this tool speeds up inspections, which ultimately reduces the number of days the aircraft needs to be in the hangar. This improves aircraft availability in both the DOD and in the commercial airline industry.

CTMA: Commercial aircraft service companies have used the NDT Tracker for Mobile C-Scan Generation, including Delta TechOps, ST Engineering, and Aeroman. What impact has the technology had at these companies?

Kevin Tang: The NDT Tracker is being used right now in one of the world's largest commercial MRO facilities in El Salvador. They're called Aeroman. They've given us feedback that a huge benefit of our tool is that it makes the inspection process much more consistent.

We have a business case that shows how the NDT Tracker reduces labor hours. It's not just the inspectors whose labor hours are reduced. It's also the mechanics who have to draw the grids and the engineers who have to review the results. The NDT Tracker streamlines the entire inspection workflow and makes it much more efficient.

The NDT Tracker also eliminates rework. The legacy method involves a lot of rework because it's a manual process. Sometimes inspectors don't get the whole area, or they get part of it wrong, or there is miscommunication between the inspectors. Because our tool is a camera-based solution, there is no miscommunication that leads to rework. All commercial companies and the DOD want to reduce and eliminate rework because it drives up costs and reduces aircraft availability.

In addition to the commercial airline industry, other industries are interested in using our technology. Walt Disney Parks approached us. They have tons of structures that they need to inspect. Another example is the oil and gas industry; they do UT grids, and a lot of the time they have robots to help with the huge areas they need to inspect, but we've been told at the end of the day they still need to do a lot of manual work. Any industry that requires UT grid inspections can use our technology.

CTMA: The NDT Tracker for Mobile C-Scan Generation is in active use at Tinker Air Force Base and Robins Air Force Base. What impact has the technology had at these bases?

Kevin Tang: This tool actually got its start at Tinker Air Force Base. It was custom made by their inspectors, for their inspectors. We started out working with the Air Force, and we're all about serving those who are serving and protecting us. It's exciting with this new CTMA project to be able to continue to serve the DOD.

The DOD is dealing with aging aircraft that have to be completely overhauled. At Tinker, the KC-135s and the B-52s are their biggest workload. They use our tool a lot, and they've been very happy with it. They've had two in use over the past five years and they've ordered another one. Overall, the tool has greatly improved communication. Now everyone's on the same page.

We keep getting good feedback from Robins Air Force Base. They're in the process of applying the NDT Tracker to their cargo floor inspections.

We're also working with Robins to create a headset version of the Tracker. We've already finished one phase of the headset version. The current version of the Tracker has a camera and a tablet display. The new version won't require a display because inspectors will be able to see the grid virtually displayed on the surface of the aircraft itself. And the new version won't require a separate camera because there's already a camera in the headset. The headset version of the Tracker is going to make everything go even faster. It will improve the user experience because the user won't have to turn their head back and forth between two different screens.

The headset version will also facilitate training because everything will be recorded. So, you can help someone walk through an inspection. You can come back to the same area and be able to project what the inspection was that you'd already done on the same part of the aircraft or the same aircraft at a later date.

The headset version will also create a digital twin of the aircraft, which every organization wants, because it keeps the whole history of the aircraft at your fingertips and facilitates predictive maintenance, so that's really exciting.

CTMA: Is there anything else you'd like to add?

Kevin Tang: The Tracker is software more than anything else and it can be customized. I've been traveling all over the country and the world for the last two years, and there hasn't been one feature request that we haven't been able to do. It's just a matter of either time or resources.

Every time we talk to a new customer or user, we always learn more about how people can use the tool in new ways. And it's usually just a change in the software that can make it even more effective. The Tracker is continuing to get better and better, not just with the headset version. There's still a lot of features and a lot of great ideas that come from the inspectors, and we're really excited about implementing those to make it even better.

One of the benefits of working with us is that we're a small business. We're very responsive, and we want to be able to make the tool as useful as possible for you and your organization. We're ready to partner with you. Pretty much any organization that does UT grid inspections or handheld UT inspections will benefit from using the NDT Tracker.

To learn more about the NDT Tracker for Mobile C-Scan Generation, by Cybernet Systems Corporation please visit: https://tracker.cybernet.com and visit the Tracker's YouTube channel at: https://www.youtube.com/@CybernetTracker. ∎

Sustainment Accelerator in NC Draws 1,500

NCMS hosted a second annual Sustainment Accelerator at the Riverfront Convention Center located in New Bern, NC, in collaboration with the NavalX Eastern North Carolina Tech Bridge, Craven County Economic Development, and Fleet Readiness Center East (FRCE). From July 22 to 24, industry and academic partners demonstrated innovative technologies that support the focus areas of the Eastern North Carolina Tech Bridge: MRO operations, advanced manufacturing, augmented and mixed reality, automation and robotics, data analytics and visualization, and workforce development.

Working with FRCE and the local Tech Bridge, NCMS brought 32 best-in-class companies and their technology-based solutions that have great potential to transform how Fleet Readiness Centers repair and overhaul naval aviation assets and significantly reduce the maintenance cycle time.

Approximately 1,500 personnel from FRCE engaged with industry partners over the course of two days and deep-dived solutions needed to innovate and modernize aircraft sustainment operations. NCMS collected feedback from showcase participants and is currently in process of analyzing and organizing the information to provide FRCE and Tech Bridge leadership for action.

TowFLEXX MilTech demonstrated their remote-controlled aircraft towing vehicles and spoke about the value of Sustainment Accelerators.

"These events provided a valuable opportunity to engage directly with US Marine Corps air station personnel, NAVAIR operations teams, and base leadership," said Ulrich (Uli) Nielen, Senior Executive Military Sales Agent, Defense & Dual-use Technologies, TowFLEXX MilTech. "We gained meaningful insights into how Marine Corps and Navy aviation operations are managed, which will guide our continued development and support for mission-critical ground handling equipment.

"Equally important was the opportunity to exchange knowledge and perspectives with fellow vendors and stakeholders across the defense sustainment ecosystem," Nielen said. "TowFLEXX MilTech remains committed to participating in future NCMS Accelerator events in close collaboration with the Department of the Navy, contributing to innovation, readiness, and operational efficiency in military aviation." ∎

TowFLEXX MilTech demonstrates their remote-controlled aircraft towing vehicles at the 2025 Sustainment Accelerator in North Carolina. (Photo credit: TowFLEXX MilTech.)

Knowledge Bar Highlights Recent CTMA Project Success

The NCMS Sustainment Accelerator held in New Bern, NC, showcased technology demonstrations at the exhibit hall's "Knowledge Bar." One exhibitor, Defense Engineering Services (DES), featured an innovative tool validated through a recent CTMA project.

DES, based in Ladson, SC, offers mechanical and electrical design solutions combined with the ability to prototype, test, and manufacture hardware.

"This project designed a Spherical Bearing Liner Integrity Evaluation Tool that evaluates the integrity of polymer liners used in spherical bearings for V-22 Ospreys," said Isaac Brorson, DES Electrical Engineer. "Through in-house and field testing, DES has verified that this tool can consistently diagnose bearings that suffer from internal liner wear. This technology will improve the Navy's ability to model and predict liner wear, leading to increased V-22 fleet readiness."

Josh Chapman, an NCMS Deputy for the Maintenance and Sustainment Program, termed DES's demonstration at the NCMS Sustainment Accelerator as a win-win.

Defense Engineering Services (DES) electrical engineer Isaac Brorson explains the Spherical Bearing Liner Integrity Evaluation Tool to a participant during the NCMS Sustainment Accelerator. (Photo courtesy of Kathaleen DeMario, Defense Engineering Services.)

"Their demonstration highlights not only a successful CTMA initiative but also the broader value NCMS brings to its members through events like these," Chapman said. "It underscores the transformative impact a Sustainment Accelerator can have—delivering tangible benefits to both our industry partners and DoD artisans on the front lines." ∎

NCMS Supports the 2025 Global Expeditionary Logistics Symposium

NCMS recently served as a Gold Sponsor for the 2025 Global Expeditionary Logistics Symposium (GELS), held August 5 to 7 at Christopher Newport University in Newport News, VA. The event was co-hosted by the university's Center for American Studies and the Association of Marine Corps Logisticians. It featured engaging thought leadership, innovation, and connection, with 250 attendees representing the logistics and supply chain professional community across the Marine Corps, DOD, manufacturing and service industries, and academia.

The event delivered three days of interactive and collaborative sessions centered on this year's theme: "The Littorals." Numerous speakers and panel discussions covered pressing challenges and innovative solutions in joint logistics.

Keynote speaker LtGen Stephen Sklenka, Deputy Commandant for Installation and Logistics, US Marine Corps, discussed how potential conflicts in the Indo-Pacific region will feature severely contested logistics where mobility will be the key to victory. Additionally, future military engagements will involve coalition forces, where interoperability will be critical to success.

Keynote speaker Patrick Kelleher, Deputy Assistant Secretary of Defense for Materiel Readiness, emphasized how logistics can serve as a deterrent to conflict: If the United States demonstrates logistics excellence and dominance, foes will be much less likely to engage in kinetic conflict. He noted that the Defense Logistics Association's Global Resilience Initiative offers a model of how to vastly improve sustainment posture moving forward.

Keynote speaker LtGen Francis Donovan, Vice Commander for US Special Operations Command, discussed how joint forces will be key to victory in the Pacific. Accordingly, they will need to be logistically interoperable and, whenever possible, interchangeable.

Several thought-provoking panel discussions generated buzz, including "Building and Securing Resilient Supply Chains in Contested Littorals," "Space Logistics for the Joint Warfighter," "Advanced Manufacturing for Littoral Sustainment," among many more. For more information about the Association of Marine Corps Logisticians, visit: https://www.marinecorpslogistics.org/. ∎

Deputy Assistant Secretary of Defense Patrick N. Kelleher (right) speaks during his keynote address at the 2025 Global Expeditionary Logistics Symposium with Moderator Col. Kirk M. Spangenberg, President of the Association of Marine Corps Logisticians (left). (Photo courtesy of the Association of Marine Corps Logisticians.)

New CTMA Project Final Reports

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

Advanced Manufacturing to Increase Aircraft Functionality and Sustainability—Phases I-V
This initiative was designed to improve the state of advanced materials, virtual prototyping, virtual visualization, additive manufacturing, and simulated maintenance planning to conduct an all-aspect analysis and operational simulation of an aircraft kit that would temporarily modify an existing aircraft to have amphibious capabilities. See Report

Artificial Intelligence/Machine Learning to Improve Supply Chain Management—Phase IV
The purpose of Phase IV was to implement and improve an effort to support a maintenance organization's use of AI/ML with advanced mathematical algorithms in supply chain management, demonstrating an increase in parts availability and reduction in customer wait time. An in-depth analysis of the initial delivery and demonstration at MCAS Yuma was conducted to realize efficiencies in operations. See Report

Computed Tomography for Quality Control for Additive Manufacturing Parts
The project team identified a CT scanner having the desired capabilities required by the Air Force to enable expanded access to routine CT scanning for NDI of AM parts and to help guide the improvement and greater acceptance of AM part manufacture within the Air Force. The project also provided for a service package to cover maintenance, training, and servicing requirements for the initial operation period of the FF85. See Report

Corrosion Prevention and Control (CPC) Program Development—Phase III
The objective of Phase III was to develop a standard stepwise process and procedure for ensuring that organization-wide practices are consistent and allow for approved deviations from practice for applicable conditions. For the Army this included developing templates and tools to aid in adopting practices, preparing case studies, and monitoring progress in adopting the practice. See Report

Enhancing Critical Components to Improve Full Vehicle System Reliability and Maintainability
The approach for this project was to leverage current-day modeling and simulation tools to review and evaluate three critical, legacy M1 Abrams components (including the T156 track) in order to design new components that are

This rendering depicts an MC-130J with a removable amphibious float modification for which a CTMA project initiated development, resulting in the fabrication of a kit for operational demo. (USAF digital illustration.)

more reliable, maintainable, efficient, and/or lower cost. All the components that were delivered in this project will be put on an M1 vehicle for on-vehicle testing to determine their feasibility to be used on production vehicles in the future. See Report

Highly Electrified Vehicle System Development Using Additive Manufacturing Technology

This proof-of-concept was the initial development and testing process of an Ultra Compact Traction Drive System in an integrated package that can deliver ≥ 11 kW/L. The deliverables will advance the state of AM and 3D printing, which manufacturers can learn from in order to improve reliability, reduce space claim, and reduce the lifecycle maintenance costs of electric drives and power electronics found in EVs. See Report

Innovative Carbon Fiber and Graphitic Foam Solutions

The project has demonstrated significant advancements in utilizing new manufacturing processes for carbon-based materials to create more durable and higher strength light-weight components and parts. Continued refinement and collaboration are essential to fully realize the benefits of these materials, ensuring they meet stringent military requirements and provide enhanced performance and cost-effectiveness. See Report

Lightweight Design for Ground Combat Vehicle Components—Phase II

This project used the U.S. Army's lightweighting goals as a test bed to develop optimized materials that reduce weight without decreasing vehicle safety, and to show how such improvements can be transferred to commercial applications. See Report

Mixed Reality Expert Guidance Demonstration

The Mixed Reality Expert Guidance (MREG) initiative successfully delivered a scalable, secure, and functional AR-enhanced remote guidance system that demonstrated its ability to address workforce challenges caused by the loss of institutional knowledge and operational inefficiencies. The initiative preserved critical expertise from retiring workers through robust knowledge capture methods and demonstrated its applicability in disconnected environments. See Report

NAVAIR Expeditionary Fluid Analysis (EFAC) Evaluation

Naval Air Systems Command (NAVAIR) was provided two portable Spectro FieldLab 58 units to assess for the capability and usability as a condition-based maintenance (CBM) tool in the laboratory and in the field for the US Navy. The project was able to establish that, even with prototype instrumentation, the unit could function as an "O-Level triage" screening system, with the ability to replace 80-90% of currently conducted Atomic Emission Spectrometry (AES) lab tests. See Report

NMP-Free Lithium-Ion Electrodes for Battery Manufacturing—Phase III

Phase III continued to test new materials to improve the design and production of lithium-ion cathodes. PPG used NMP-free cathode slurries to lower their cost in comparison to the PVDF-NMP slurries widely used in lithium-ion battery production. Phase III also assessed new materials for advanced lithium-ion anodes, aiming to optimize performance and cost. See Report

Optimizing Digitization and Automation to Improve Smart Manufacturing and Maintenance Activities

This initiative supported the opportunity to modernize and implement state-of-the-art digital commercial technologies and processes to improve workflow packages, critical systems, and tools across the Joint Manufacturing and Technology Center's manufacturing and maintenance repair operations at Rock Island Arsenal. See Report.◼

Integer Technologies

Integer Technologies is a defense tech and software company dedicated to creating a safer world by transforming innovative research into fieldable technology for national security and industry customers. The company's high-tech solutions help both operators and autonomous systems make better decisions, faster, in uncertain environments. Integer offers digital engineering capabilities across a portfolio that includes robotic and unmanned systems, sensors and perception, power and energy systems, advanced manufacturing, and cyber-physical systems.

Integer has unmanned platform capabilities with technologies that increase the independence of autonomous systems. The company creates software for autonomous surface, underwater, and ground vehicles, leveraging AI-powered sensing and real-time data processing to optimize and dynamically adapt mission operations.

Integer's mission-ready perception technology transforms navigation and situational awareness for manned and unmanned platforms. By offering passive sensing solutions that integrate high-performance cameras with advanced AI, these solutions provide a silent alternative to active systems like radar for use in communications denied and emissions constrained environments.

The company also manages power and energy systems for electrical grids and military platforms. Integer's tactical energy management controls integrate AI-enabled decision aids powered by real-time data and predictive models, helping operators coordinate electrical and mechanical equipment—power generation, storage, distribution, and loads—for optimal effect while reducing their cognitive load.

Integer's advanced digital manufacturing solutions unlock the benefits of real-time data, connectivity, and AI including efficiency gains, quality improvement, waste reduction, targeted analysis of alternatives, and root cause identification.

The company's cyber-physical resilience technologies protect critical systems—including unmanned vehicles, robotic systems, and industrial controls—against evolving cyber threats. Their technology identifies vulnerabilities, assesses operational impacts, and deploys adaptive, targeted defenses.

Integer was recognized as South Carolina's No. 1 fastest growing company in 2024.

To learn more about Integer Technologies, visit www. integer-tech.com. ∎