



RAPID + SUSTAINMENT OFFICE

Quarterly Report
January - March 2024

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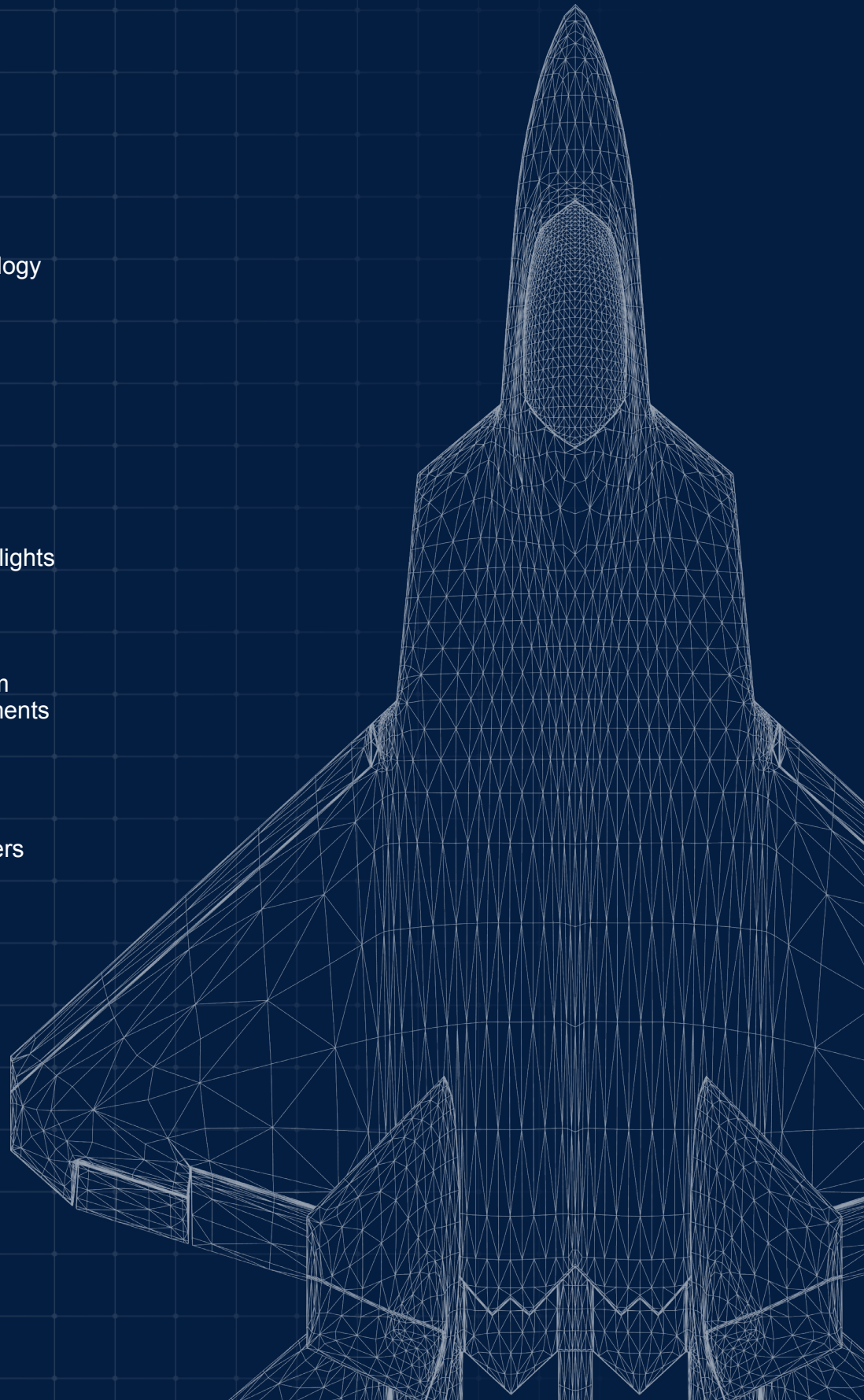
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PURPOSE

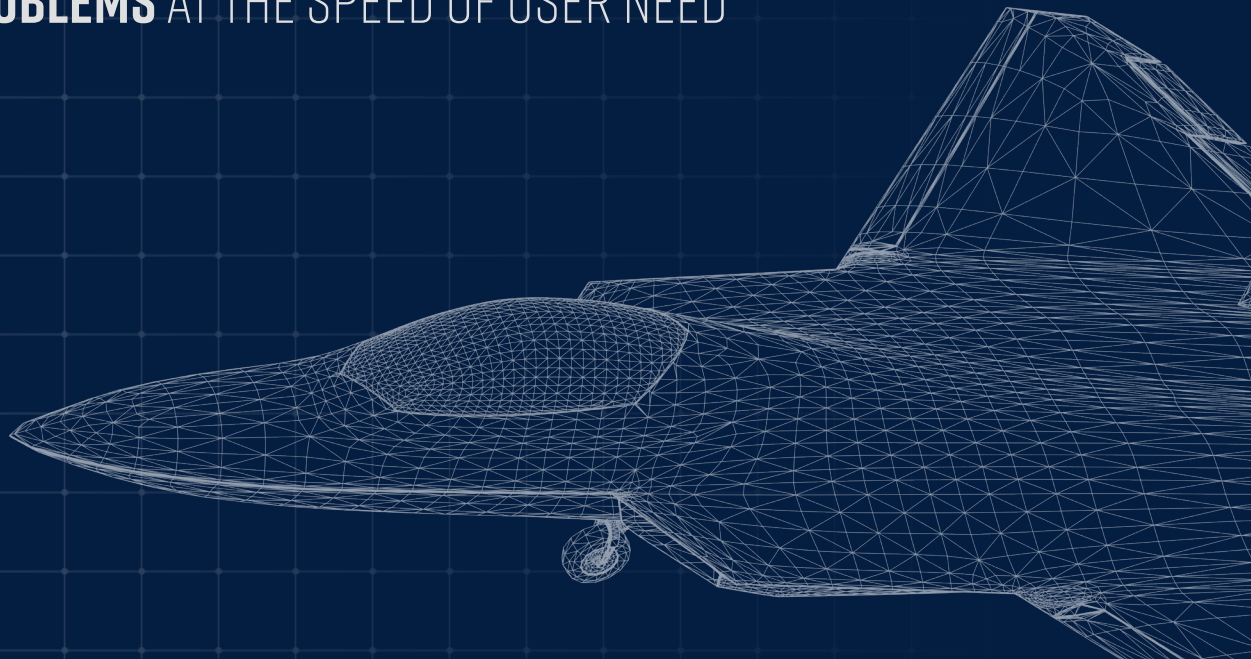
ACCELERATE DELIVERY OF CRITICAL OPERATIONAL SOLUTIONS TO THE DEPARTMENT OF THE AIR FORCE SUSTAINMENT ENTERPRISE

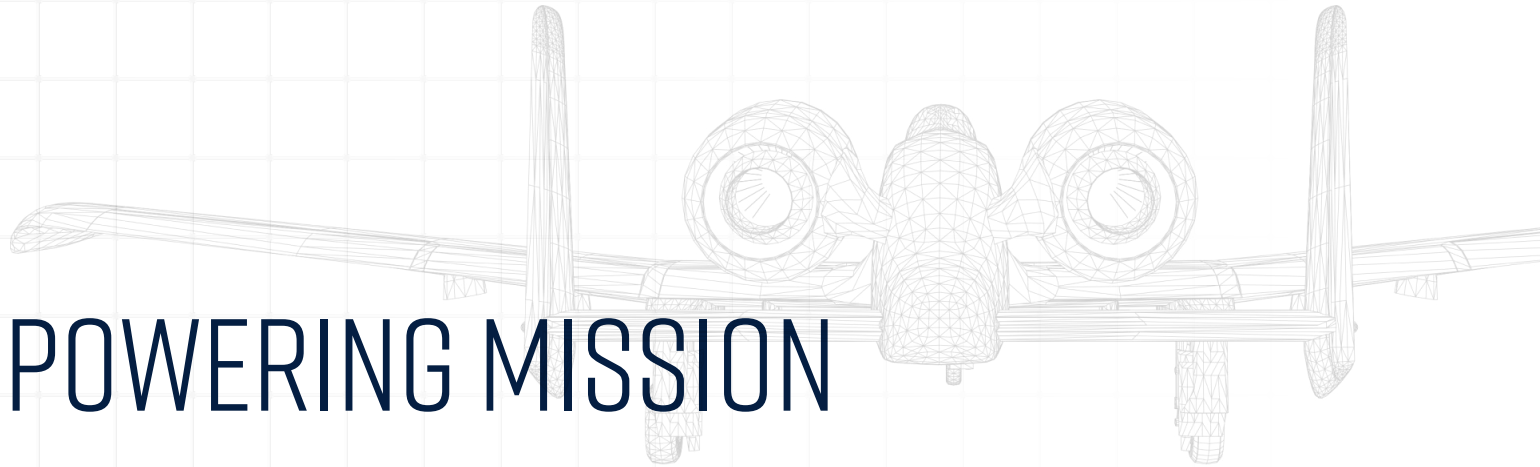
MISSION

OPTIMIZE WARFIGHTER READINESS BY **EXPLOITING TECHNOLOGIES** TO REVOLUTIONIZE SUSTAINMENT OPERATIONS

VISION

TO BE THE PREEMINENT DEPARTMENT OF DEFENSE SOLUTIONISTS THAT CHALLENGE CONVENTIONAL MINDSETS, PUSH THE BOUNDARIES OF INNOVATION, AND GENERATE CONCEPTS THAT **SOLVE PROBLEMS** AT THE SPEED OF USER NEED





POWERING MISSION READINESS THROUGH DISRUPTIVE MODERNIZATION.

AIRMEN-CENTRIC

We take on real issues that come from Airmen, maintainers, and logisticians in the field and on the flightline. They have a need. We have the skill set to answer it.

ACQUISITION DNA

Our capabilities come with a massive wingspan. From requirement to engineering, prototyping to contracting, and full lifecycle production, we create solutions and execute them at scale across the USAF.

COLLABORATION

We're acquisition professionals, partnering with industry, academia, and government to develop the right, viable, proven solutions.

FUTURE-FOCUSED

We're relentless in our pursuit of a mission-ready tomorrow. As sustainment needs accelerate, we exist to anticipate, create, and execute mission-critical capabilities.

RSO TECHNOLOGY FOCUS AREAS



Artificial Intelligence & Machine Learning (AI/ML)

We apply AI and ML to optimize fleet maintenance, increase aircraft availability, and minimize aircraft downtime.

Our most prominent application of AI is within our **Condition Based Maintenance Plus (CBM+) Program Office**. This technology employs AI that enables us to improve maintenance data quality and evaluate large sets of aircraft sensor data and maintenance history to predict component failures. These applications empower our CBM+ program office to save thousands of maintenance hours every year.



Advanced Manufacturing

The RSO's **Advanced Manufacturing Program Office (AMPO)** scales organic capability and serves as the Air Force's focal point for the application of AM in matters related to acquisition and sustainment.

The AMPO executes four major functions:

- Technology Assessment
- Airworthiness Certification Support
- Product Support Management
- Deployment Across the Enterprise

Vision

Empowering supply chain management and scaling AM capabilities across the Department of the Air Force to ensure continuous Warfighter advantage and readiness anytime, anywhere in the world.



Rapid, Agile, Integrated Capabilities (RAIC)

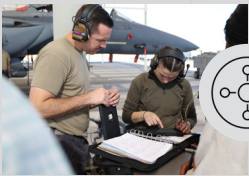
The RAIC Team drives and leads the rapid adoption of sustainment-centric technologies to improve readiness and positively impact costs, be that in-garrison, or in both a contested and non-contested deployed environment, while exploiting modern tools to increase expertise, eliminate waste, enhance situational awareness, and produce and restore mission-critical materiel for the Air Force.

The RAIC Team discovers, develops, matures, and modernizes sustainment technologies within the following focus areas:



AUTOMATION & ROBOTICS

We apply automation and robotics to eliminate maintenance tasks that are repetitive, labor-intensive, or hazardous, making it possible to accomplish these tasks safely and efficiently with a high degree of accuracy.



DATA & DIGITAL ENVIRONMENTS

We standardize maintenance and sustainment data collection to serve as a connector of data sources across the Air Force. Our process is to collect the data, identify what's useful, turn it into a functional format, and then leverage it to inform smart and proactive decisions.



AUGMENTED & VIRTUAL REALITY

Augmented and Virtual Reality (AR/VR) technology creates an immersive environment for Airmen to train and execute more efficiently and effectively. The immersive access to digital resources allows the Air Force to predict, analyze, and solve problems faster, leading to a decrease in sustainment costs and increase in Airmen readiness. The AR/VR Product Team aims to continuously collaborate with users, characterize problems, and design and scale turn-key technological solutions that benefit the entire sustainment enterprise.



RAPID & AUSTERE MAINTENANCE ENVIRONMENTS

We provide Airmen with effective tools, leveraging modern, cross-cutting technologies to reduce the Air Force's logistical footprint in conjunction with enhancing mission capability and readiness. We are focused on rapidly implementing emerging and solution-oriented sustainment technologies and modernization within austere environments.



RSO SPOTLIGHT

RAIC STEPS UP IN THE CLUTCH TO RECEIVE KEY FUNDING FOR MAINTENANCE IN AUSTERE ENVIRONMENTS

In March 2024, the RAIC Agile Combat and Integrated Product Teams wasted no time in securing Continuing Resolution funding from the Office of the Secretary of Defense's Rapid Defense Experimentation Reserve.

The RAIC teams rapidly mobilized their contractor partner, drafted contract documents, issued a Request for Proposals, and awarded the funds in seven days to deliver critical rapid infrastructure deployment in austere environments in support of Agile Combat Employment and Indo-Pacific Command initiatives.

The funding will provide Hands-off Expeditionary Tents and Solar Powered Integrated Structures developed by RSO and partner, Pvilion.



QUARTER HIGHLIGHTS

LT. GEN. DONNA D. SHIPTON BECOMES THIRD RSO PROGRAM EXECUTIVE OFFICER – JANUARY 2024



We had the honor of hosting new Air Force Life Cycle Management Center (AFLCMC) commander, Lt. Gen. Donna D. Shipton, at our Advanced Technology and Training Center in Dayton, Ohio. Shipton, who also took the helm as RSO's third Program Executive Officer, received a hands-on demonstration of the facility's state-of-the-art advanced manufacturing technologies and capabilities from our AMPO Team and teammates from the University of Dayton Research Institute.

AMPO HOSTS 2024 TECHNICAL INTERCHANGE MEETING (TIM) – FEBRUARY 2024



Nearly 200 were in attendance for the 2024 AMPO TIM, a three-day event focused on advancing additive manufacturing and cold spray technologies across the Department of Defense, hosted by the RSO and the University of Dayton Research Institute.

A sampling from the agenda included material characterization and inspection for AM discussions and scanning and modeling and cold spray workshops.

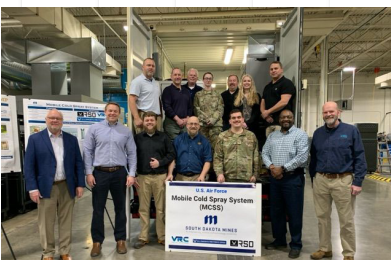
Follow RSO on LinkedIn (@afsrso) for updates on the 2025 AMPO TIM!

LT. GEN. LINDA S. HURRY VISITS HANGAR 01 – MARCH 2024



We were pleased to welcome Lt. Gen. Linda S. Hurry, Air Force Materiel Command Deputy Commander, as well as Mr. Dennis L. D'Angelo, AFLCMC Executive Director, for an RSO immersion and to discuss how the three organizations can reoptimize for the Air Force's focus on Great Power Competition.

AMPO DELIVERS THE AIR FORCE'S FIRST MOBILE COLD SPRAY CAPABILITY – MARCH 2024



The RSO AMPO delivered the first mobile cold spray unit for the Air Force at Ellsworth Air Force Base, South Dakota. In collaboration with the South Dakota School of Mines & Technology, Ellsworth AFB, and industry partner, VRC Metal Systems, this innovative mobile solution allows maintainers to perform cold spray repairs directly on the flightline, decreasing repair times and enhancing aircraft operational readiness.



NOTABLE TEAM ACCOMPLISHMENTS



ADVANCED MANUFACTURING PROGRAM OFFICE (AMPO)

- The AMPO, in collaboration with Dayton Aerospace and the University of Dayton Research Institute, hosted the Inaugural AdvM Requirements Workshop, 29 February 29 – March 1, 2024, at the ATTC in Dayton, Ohio. This workshop brought together multiple organizations across the Department of the Air Force (DAF) to identify approaches maximizing the full spectrum of AdvM technologies for manufacture and repair capabilities addressing enterprise-wide sustainment challenges. This workshop is Phase One of a two-phase strategy consolidating sustainment barriers and developing a new DAF AdvM strategy.
- The AMPO delivered the last Stratasys F900 polymer printer to Aviano AB, Italy, totaling 20 printers fielded. This effort is the first step in growing the organic industrial base and scaling 3D printing capabilities across the DAF to meet sustainment needs. Next steps include installation, printer qualification, and operator training.
- The AMPO, Chief of Staff of the AFVentures, Spark, Prime and SpaceWERX Group (AFWERX) conducted a combat innovation workshop March 18-22, 2024 at the ATTC, Dayton, OH. This inaugural event established collaboration between innovation organizations, uniting capabilities to identify innovative AdvM technologies and expanding the Air Force's competitiveness for Great Power Competition.
- Members of the AMPO attended the Logistics Officer Association Symposium, March 26-29, 2024, supporting the DAF's AM Strategic Goals I and III, which focus on integration of AM in the Department of Defense and industry, promoting agile use of AM and showcasing AM technologies to warfighters.



CONDITION BASED MAINTENANCE PLUS (CBM+)

- Developed code for Predictive Analytics and Decision Assistant (PANDA) Release 4.4, implementing a code freeze on March 29, 2024. PANDA Release 4.0 will undergo regression and user acceptance testing (UAT) prior to being deployed to production.
- Noteworthy enhancements to be included in Release 4.4 include:
 - Data Lineage Dashboard – Data feeds from DART and S-IRIS will be monitored within the PANDA Data Lineage Dashboard, enabling CBM+ and its contractor partners to identify data transfer issues in real time so that corrective measures can be taken as soon as possible.
 - Sensor Based Algorithms (SBA) Improvements – A variety of enhancements to the SBA application include a guided case workflow (standardizing how users interact with the application to reduce potential for errors), cold case logic (to automatically resolve cases which are no longer actively being worked), sortie alert tracker (which monitors sorties post-maintenance to ensure the cause of the alert has been resolved), and sensor explorer (leveraging visualization tools within PANDA to allow users to analyze sensor data directly).
 - Help Section – Each application within PANDA will have a separate, dedicated help section that will allow users to access FAQs, written guidance, and training videos. These changes will enable users to more quickly find relevant information.
- Fielded initial two PANDA-generated SBA failure modes (6 models) for KC-135 weapon system for Accelerometer and Control Positions Sensors.
- Fully transitioned KC-135 from legacy toolkit to PANDA for SBA alert generation and workflow; conducted training with over 100 users across four training sessions.
- Continued expanding B-1B PANDA SBA failure modes by fielding two additional SBA Failure Modes (FMs) (two models) for Hydro Temp Signal Conditioning Distribution Unit (SCDU), Flap/ Slat ABS Asymmetry, bringing the total fielded failure modes for B-1B to 16 FMs.
- Completed MC-130 prototype utilizing data captured from a 1553 databus, proving feasibility of SBAs utilizing new data source and limited historical data set.
- The CBM+ Program Office and HAF/A4LM conducted the first Requirements Working Group (RWG) and PANDA Function Requirements Board (FRB), January 22-23 2024. CBM+ stakeholders submitted 19 requirements that were prioritized through the CBM+ RWG and 31 requirements that were prioritized through the FRB. The CBM+ Program Office is aligning resources against the requirements and developing execution and delivery plans.

SENSOR BASED ALGORITHMS (SBA) PATHWAY

Legacy:

C-130 and C-5 remain in legacy system

443

scheduled maintenance actions completed since implementation (October 2018)

Modern (PANDA):

23

failure modes (60 models) operational for B-1B, C-5, & KC-135

7,822

alerts generated

1,217

cases created

36

Mx actions completed

730

active users registered in PANDA

474,959

operations ingested





RAPID, AGILE, INTEGRATED CAPABILITIES (RAIC)

- The RAIC Automation and Robotics (A&R) Team co-chaired the Joint Robotics Organization for Building Organic Technologies Summit VII meeting, January 23-25, 2024, demonstrating enterprise robotic solutions applied across the Department of Defense and leveraging commercial industry leaders, such as: Deloitte, Spirit AeroSystems, and Amazon, and other best practices to improve military manufacturing and sustainment operations.
- The A&R Team participated in a pre-Initial Acceptance Test event at the National Institute for Aviation Research in Wichita Kansas on January 26, 2024, focusing on progress made in the development of an automated system to “Match Drill” holes in an F-16 replacement bulkhead which will improve maintenance flow times in the depot. Attendees included representatives from the 309th Aircraft Maintenance Group from Hill AFB.
- As part of an active Small Business Innovation Research project, the A&R Team took delivery of a working E-Drill 2.0 system from Perfect Point EDM at Hangar 01 on March 7, 2024, receiving training in its use. The Electro Discharge Machining technology allows a user to efficiently remove fasteners 20x faster from an aircraft skin without damaging the surrounding surface area and greatly reducing foreign object debris, all with less effort than traditional defastening methods.
- The RAIC Agile Combat Technologies (ACT) Team advanced the Maintenance Augmented Reality System (MARS) by creating C-130 Extended Reality content with a new mission partner at the 19th Maintenance Group at Little Rock AFB, January 30 – February 1, 2024. This partnership increases MARS’ capability portfolio to include F-15, C-17, and C-130. The team captured 32 additional Maintenance Augmented Reality System (MARS) tasks for the C-17 during a content collection site visit with the 164th Airlift Wing, March 3-7, 2024, providing further evaluation of MARS’ ability to support Multi-Capable Airmen objectives.
- The ACT Team briefed Lt. Gen. Linda S. Hurry, Air Force Materiel Command Deputy Commander, on its Augmented and Virtual Reality (AR/VR) portfolio and HAF/A4 Extended Reality Enterprise Strategy involvement, March 1, 2024, providing insights to RSO’s role in the broader Air Force AR/VR landscape.
- The ACT Team delivered a capability briefing to senior leaders at Joint Base McGuire-Dix-Lakehurst and members of the Air Force Special Operations Command. The partners agreed to support on multiple procurement efforts that deliver rapidly deployable structures and sustainment hardware to field units, improving operational capability and conditions for maintenance personnel in extreme weather conditions.
- On 28 February 2024, the RAIC Lighthouse Team, in collaboration with Air Force Global Strike Command Logistics Directorate team members, hosted a contingent of staffers from Headquarters Air Force and Air Force Materiel Command to showcase current RSO digital maintenance activity tracking capabilities and a roadmap for developing enhanced documentation protection technology to be developed in partnership with Google Public Sector and Beacon Interactive Systems.
- During the week of 18 March 2024, the Lighthouse Team traveled to Minot AFB to demonstrate the capabilities of the Lighthouse Integration Technology Engine platform to members of the 5th Maintenance Group in support of the launch of an Air Force Global Strike Command Lighthouse.

PARTNERSHIPS



CUSTOMERS



RSO
VISIT OUR WEBSITE

To contact the RSO, please email: AFLCMC.RSO.workflow@us.af.mil



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