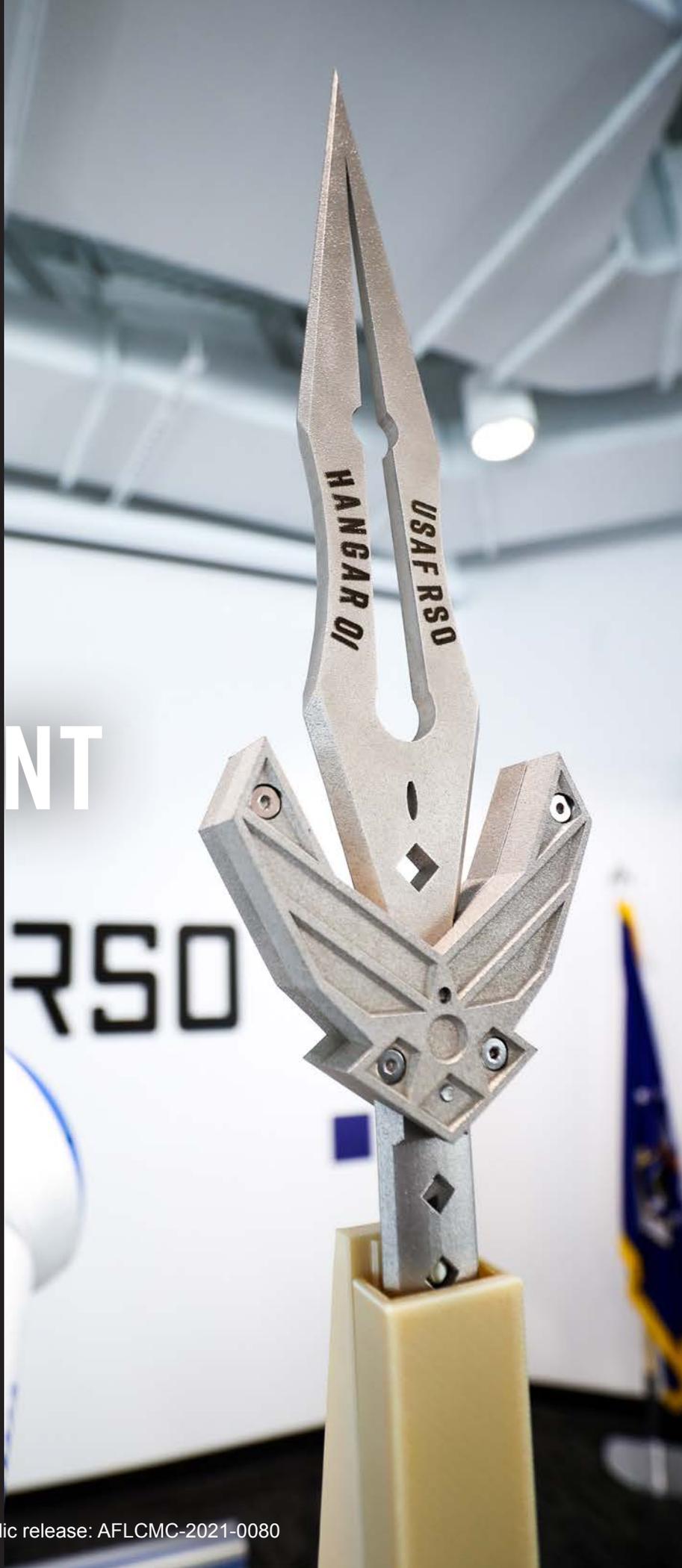


RAPID SUSTAINMENT OFFICE

Quarterly Report
January - March 2021

RSO



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MISSION

**TRANSFORM THE OPERATIONS AND
SUSTAINMENT ENTERPRISE VITAL TO THE
WORLD'S MOST ADVANCED AIR FORCE**

OBJECTIVE

**INCREASE MISSION READINESS BY
IDENTIFYING, APPLYING, AND SCALING PROVEN
SOLUTIONS AT THE SPEED OF RELEVANCE TO
ADVANCE THE OPERATION AND SUSTAINMENT
OF THE UNITED STATES AIR FORCE**

TECHNOLOGY FOCUS AREAS



ARTIFICIAL INTELLIGENCE & MACHINE LEARNING

We apply machine learning and artificial intelligence to optimize fleet maintenance, increase aircraft availability, and minimize aircraft downtime.

The Condition-Based Maintenance Plus (CBM+) program is RSO's AI-powered solution for the maintenance needs of the entire Air Force. We're able to improve maintenance data quality and evaluate large sets of aircraft sensor data in order to predict and prevent component failures before they happen. CBM+ already saves thousands of maintenance hours each year.



ADVANCED MANUFACTURING

The RSO Advanced Manufacturing (AM) program office works to identify, develop, transition, and scale AM technology to the entire Air Force. The AM program office will leverage both emerging and mature technology to reduce operations and support costs and improve readiness.



AUTOMATION & ROBOTICS

The RSO applies 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 are standardizing maintenance and sustainment data collection to serve as a connector of data sources across the U.S. 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

The RSO provides Airmen with effective tools, leveraging modern, cross-cutting technologies to reduce the U.S. Air Force's logistical footprint and enhance mission capability. We want to be the USAF's leading office for rapidly implementing emerging and solution-oriented technologies in austere environments.



KEY ENGAGEMENTS

MARCH

2

Hangar 01
Ceremonial
Ribbon Cutting

MARCH

9 - 10

Inaugural AR/VR
Working Group

APRIL 19 -

MAY 06

AFWERX Design
Warfare Class

MAY

17 - 21

Electronic Tug
Demonstration

JUNE

22 - 24

CBM+ Stakeholder's
Summit

JUNE

28 - 30

SBIR 20.3 Phase II
Pitch Day



RSO SPOTLIGHT - WHAT IS SUSTAINMENT? AND WHY IS IT IMPORTANT?

MICHAEL SANDER, RSO CHIEF LOGISTICS OFFICER

Nearly everyone is familiar with the legendary B-52 Stratofortress. This marvel of Air Force aviation has been flying and protecting freedom worldwide since 1954 and is projected to operate through 2050. Nearly 100 years of continuous operation for this bomber will be an astounding feat. And you may be asking yourself, "How is this possible? How does this monster aircraft continue to fly, mission after successful mission?" The answer is simple – sustainment.

Sustainment is the unsung hero of the United States Air Force. When a new aircraft, such as the F-35, makes its debut, aviation enthusiasts and the general public alike gape in awe at its amazing new features and engineering advancements. But once the "new aircraft smell" settles and these planes have a critical job to do, the Air Force entrusts technicians at the organizational, intermediate and depot-levels to keep its aircraft flight-ready, focusing on the safety and success of future missions.

The Defense Acquisition University states life cycle sustainment “translates force provider capability and performance requirements into tailored product support to achieve specified and evolving life cycle product support availability, reliability, and affordability parameters.” Often, Air Force sustainment is commonly regarded simply as aircraft maintenance, but its reach goes much further into supply, transportation, sustaining engineering, data management, human systems, and safety considerations. Sustainment is multi-faceted and complex with two primary and often competing goals of increasing equipment availability while reducing operations and sustainment (O&S) costs. In fact, 70 percent of the cost of an Air Force weapon system is expended to sustain its operation, so it is vital to seek and develop novel technologies and processes for sustainment that drive down costs.

Every day, worldwide threats to our nation’s safety increase, and our ability to ensure our Air Force is ready to meet these threats is very real. The Air Force Sustainment Strategy Framework establishes four lines of effort to meet operational objectives: 1) enhance mission generation, 2) improve enterprise materiel support, 3) expand enterprise repair networks, and 4) capitalize on new data analytics and methods.

To actively address these objectives, the RSO focuses on rapidly identifying promising technologies and sustainment process improvements, prototyping and verifying their utility and application, and deploying those that demonstrate the ability to increase readiness across the Air Force enterprise. Additionally, all of the projects that the RSO invests in are evaluated by asking, “Does this technology have the potential to drive down cost and save dollars?” Bottom line – the RSO increases mission readiness, reduces costs, and saves time at an accelerating speed.

Fleet readiness is paramount to the security of the United States and its interests, and the RSO is dedicated to its mission of rapidly providing revolutionary sustainment technologies that ensure the Air Force fleet is always prepared.





BY THE NUMBERS

AM

Total parts delivered

2,999

Individual AM part numbers flying

76

Total AM parts flying

229

Completed Technical Data Packages

360

CBM+

Aircraft platforms fielded

12

(C-5, KC-135, C-130, C-17, B-1, B-52, AC/MC-130, F-15, RC-135, HH-60, F-16, A-10)

Maintenance units trained

551

Aircraft platforms on-boarding

9

(KC-46, ICBM, B-2, CV-22, T-6, MQ-9, RQ-4, EC/HC-130, U-2)

Aircrafts actively monitored across the USAF

3,194

Troubleshooting hours saved

5,000+

eRCM removals since implementation (April 2019)

443

Sensor Based Algorithm maintenance alerts issued since implementation (October 2018)

250

DELIVERING CAPABILITIES

The RSO Innovation and Integration (i2) team continues to identify small businesses to execute prototype contract efforts addressing RSO focus areas and the RSO's objective of increasing mission readiness and decreasing sustainment costs.

The RSO Innovation & Integration (i2) team has a total of 32 Small Business Innovation Research (SBIR) projects being prototyped and evaluated in the Apply phase.

The RSO also added three non-SBIR projects (PANDA, L3, and Essentium) and identified and awarded 24 brand new SBIR projects (SBIR 20.3 P1).

HIGHLIGHTS FROM 3 OF OUR 32 PARTNER COMPANIES

Three recent SBIR project additions address the technology focus area of Advanced Manufacturing: balancing tolerances for aerospace engines, turbine blade repair, and an enhanced dry ice blasting nozzle for maintenance tasks.



Optomec is delivering a turnkey Automated Turbine Blade Repair System to Tinker Air Force Base, enabling our Air Force to simultaneously reduce cost, risk and lead times associated with aircraft engine Maintenance Repair & Overhaul (MRO). The solution incorporates production-proven Additive Manufacturing (AM) technology with proprietary advanced vision and repair software that is already widely used for commercial turbine blade repair.



NextGen Balancing Technologies specializes in designing and manufacturing specialty balance tooling and providing balancing services and training. With the increasingly demanding balancing tolerances required of today's aerospace engines, NextGen is manufacturing state-of-the-art tooling for the Air Force that will improve the repeatability/reliability of the balancing process.



Figure Engineering is working with the RSO to develop a novel, low-noise dry ice blasting nozzle. The goal is to improve the overall throughput of several specific maintenance tasks. The reduced noise nozzle for Dry Ice Blasting allows operators to stay on task longer, reducing MRO downtime.



RSO BEGINS WORKING AT ITS NEW HOME, HANGAR 01

The RSO moved into its new headquarters, Hangar 01, in January. In partnership with the University of Dayton Research Institute, this one-of-a-kind facility will provide a revolutionary arena and collaboration hub for some of the most talented minds in government, business and education. Hangar 01 is where innovative sustainment technology will be created, demonstrated and implemented in order to ensure Air Force fleets are always at the ready.

In March, a ceremonial ribbon cutting event marked the official opening of Hangar 01. Lt Gen Shaun Q. Morris, Air Force Life Cycle Management Center Commander and RSO Program Executive Officer, and other distinguished visitors, including Dr. Eric Spina, President of the University of Dayton, Dr. John Leland, Vice President for Research and Interim Executive Director, Research Institute at University of Dayton, Nathan Parker, RSO Deputy Program Executive Officer, and Col. Nicole Ruff-Lehman, RSO Military Deputy Program Officer, toured the new facility

before a robotic arm wielding a 3D-printed dagger sliced the ribbon.

Afterwards, Morris addressed RSO and UDRI staff in attendance, stating, "You all are at the forefront of what's driving the kinds of changes we need to realize Air Force Chief of Staff Charles Brown's 'Accelerate Change or Lose' vision. And this mandate could not be any more important than in the sustainment world because the progress we can make to drive down costs and increase availability is exactly what the Air Force needs."

TAKE A VIDEO TOUR OF
HANGAR 01 **RSO**

PARTNERSHIPS & CUSTOMERS







