

AF203-CSO3

TITLE: AF Life Cycle Management Center Rapid Sustainment Office (AFLCMC/RSO) Pitch Day

RT&L FOCUS AREA(S):

Microelectronics, Autonomy, General Warfighting Requirements (GWR)

TECHNOLOGY AREA(S):

Sensors, Electronics, Materials, Human Systems, Air Platform

OBJECTIVE:

The Rapid Sustainment Office mission is to leverage mature, new, and emerging technology to reduce sustainment costs and improve readiness.

DESCRIPTION:

Six lines of effort have been established to focus the office, simplified to five here:

1. Automation & Robotics
2. Advanced Manufacturing (AM)
3. Condition Based Maintenance Plus (CBM+),
4. Digital, Rapid, Austere
5. Augmented/Virtual Reality (AR/VR) for Geo-Separated Expert & Trainer One

There are eight technical focus areas that cross-cut the six lines of effort:

1. Artificial Intelligence/Machine Learning
2. Advanced Manufacturing
3. AR/VR/Extended Reality
4. Automation and Robotics
5. Data & Digital Environments
6. Low Observable Maintenance
7. Rapid/Austere
8. Sustainment Modernization

More detailed descriptions of each can be found at afrso.com. Pain points have been identified from users and used as examples of areas of interest, but are not limited to the following:

- Automation/Robotics:
 - Smart Tool Boxes
 - Vision systems (enabling the robot to detect, orient to and execute work)
 - Mobile automation for depot and flightline sustainment (Move the system to the platform for sustainment activities)
- Advanced Manufacturing (AM):
 - Automated reverse engineering tool with minimal required user interface
 - Part printing method for easily damaged composite components during facilitation of

- other maintenance (FOM) (i.e. blade seals and bull noses)
- CBM+ Tech Insertion:
 - Ideal Work Unit Code (WUC) Tool—reads narrative and useful fields (i.e. HMC, P/N, etc.), compares WUC selected with available WUC from technical manuals and suggests idealized WUC for use during maintenance forms (i.e. AFTO Form 781A) Quality Control process. Needs to be able to be run in AWS enclave (open source-ideal, Python-current utilization).
- Digital & Rapid/Austere:
 - Disposable containers for harsh or temporary environments to support Low Observable and composite repair, corrosion control, and/or AM
 - Rapidly constructed maintenance structures
 - Predictive Analytics/Algorithm Development (PAD), speech to text for various career fields
 - Components that reduce the need for large logistics tail
 - Parts-supportable high reach capability
 - Multi-platform Test Equipment
- AR/VR:
 - Method to track job status as they are performed
 - Augmented/Extended Reality for maintenance accomplishment
 - Content development enterprise (creation, testing, and life-cycle support)
 - Quick, cost effective process to convert to S1000D format to leverage into a common operating picture for Technical Order viewing at weapon system while performing maintenance
 - Geo-separated expert access while performing tasks

The technical areas highlighted above are not meant to be exhaustive as this focus area is designed to be an open topic for any Rapid Sustainment effort that may impact future Air Force missions.

PHASE I:

Phase I efforts will focus on technical feasibility. This may include but is not limited to: analysis of existing technologies, conceptualization of new technologies, prototyping activities, user needs identification, and systems integration requirements.

PHASE II:

Phase II efforts will focus on prototyping, demonstration, integration, and analysis of innovative technologies.

PHASE III DUAL USE APPLICATIONS:

Phase III efforts will focus on transitioning the developed technology to a working commercial or warfighter solution.

REFERENCES:

1) Gill, J. C. (2019). A Feasibility Study of Additive Manufacturing for Rapid Prototyping at an Air Force Depot (Doctoral dissertation, Northcentral University).

KEYWORDS:

Advanced manufacturing; automation; robotics; sustainment;

TPOC USERS:

None