Agile, Prepared, Responsive: Readiness as an Asymmetric Advantage

2019 SAFETY AWARD WINNERS
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With Dedicated Airmen, Team McConnell Conquers Challenges
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A C-17 Globemaster from McChord AFB, WA, flies over the flight line during Air Mobility Command’s Mobility Guardian 2019 at Fairchild AFB, WA, Sept 10, 2019.

USAF photo by Amn Kiaundra Miller


Send comments or feedback to mobilityforum@us.af.mil.
The tradition of expediting innovation initiatives that help improve operational efficiency, maintain Air Force readiness, and significantly reduce the time and money that is allocated to a task continues as the Air Mobility Command (AMC) 2d Phoenix Spark Tank Competition, held in October 2019, chose two finalists and three runners-up from the 64 submissions. The first and second place finalists have the opportunity to be one of the finalists for the U.S. Air Force Spark Tank Competition in February 2020. The three runners-up will be considered for implementation by AMC. The additional 59 submissions were forwarded to the Airmen Powered by Innovation (API) program to be considered for implementation at various command levels.

First place finalist, TSgt Sharif R. Abouomar, Headquarters AMC/A4, Scott Air Force Base (AFB), IL, submitted the idea of “Computed Tomography for Aircraft Maintenance and Beyond.” “Nondestructive Inspection, or NDI, of the future is about modernizing my career field with game-changing technology,” said Abouomar. The current inspection process involves five revolving steps requiring parts to be stripped of paint, dipped in chemical solutions, examined with ultraviolet light to observe surface defects, and repainting parts. Another inspection method that Abouomar said is currently used is radiography or x-ray that incorporates a system that has been in service for decades and drives outdated inspection processes.

Abouomar suggested a more modern solution called Computed Tomography (CT) that uses three-dimensional (3D), high-resolution scanning and automated image engineering software to find the smallest internal defects, and expands manufacturing capabilities for metals technology that could decrease exposure to hazardous material and reduce the inspection to three steps, including part removal, CT inspection, and installation. Abouomar said that CT could save AMC more than $2 million annually.

Second place finalist, TSgt Brett M. Kiser, 521st Air Mobility Operations Wing, Ramstein Air Base, Germany, presented the idea of the “C-17 Loading Aid.” Kiser said he has worked with the loading aid using palletized aircraft assets while in the Air Force. Currently, the logistics rail is exposed, and sometimes, when the 463L cargo pallet transfers from the 60K loader over onto the aircraft floor, it may hit omnidirectional rollers. When this mishap occurs, it can cost an estimated $8,300 and approximately eight man-hours to replace each rail, according to Kiser. He was selected as one of the finalists for the Air Force Spark Tank Competition that was held on February 28th, 2020 in Orlando, Florida.

With fabrication help from techs, after Kiser checked the design and took measurements, the K-Wedge System was designed. “The K-Wedge costs much less at about $500 [in] parts and labor, and in as little as 1 minute you can install it on the aircraft floor using existing tie-down rings, and that’s what secures it to the floor,” said Kiser. According to Kiser, this system saves the Air Force money, prevents damage to the logistics rail, and safeguards and protects our Airmen.

SSgt Timothy M. Miller, 621st Contingency Response Wing, Joint Base McGuire-Dix-Lakehurst, NJ, submitted the idea of “3D Printed USB Adapter for Tactical Airfield Light.” Miller said the current service the Landing Zone Safety Officer (LZSO) team provides is to ensure there is always sufficient lighting for the aircraft to land by using Phantom brand tactical lights that run off of four AA batteries and requires the LZSO team to ensure that there is a constant supply and proper disposal of the AA batteries.

According to Miller, their team noticed deployed people were using cell phone...
power banks that had a much greater capacity than AA batteries. They came up with a 3D printed adaptor so they could power their Phantom brand tactical lights off of these battery packs. Miller said, “Now it is a ‘set it and forget it setup,’” and they have successfully field-tested it with C-130s and C-17s. According to Miller, if they should mass produce, it would take approximately $50,000 to $100,000 to start up, or they could rely on in-house expertise if the Air Force has the capability to 3D-print each team order.

MSgt Jacob B. Hamilton, 19th Airlift Wing, Little Rock AFB, AR, submitted the idea of the “3D Printing Initiative: Pushing Explosive Ordinance Disposal (EOD) ‘Left of Boom.’” Hamilton said to understand what “left of boom” means we should think of a detonation that is the result of an enemy action, and there is a point on a timeline where there is an effort being made to get ahead of the detonation that equals getting “left of boom.”

According to Hamilton, one of the newest threats are 3D-printed munitions created by our adversaries, and there is no way to train on these highly expensive sudden munitions. There is a potential to cut the cost of live training and replicate the latest threats in an extremely brief amount of time using proper 3D printing programs and reducing the cost of a $135 item to $1 to $2. Hamilton proposes to outfit mobility equipment packages with resources to 3D-scan and print recovered munitions and calls for standardized and centralized support to analyze and exploit this new intelligence. “That agency would then prepare new intelligence in a format that not only educates EOD operators but also disseminates it in rapid fashion,” said Hamilton.

SrA John T. Cuttito, 6th Air Mobility Wing, McDill AFB, FL, presented the idea of “Infrared Thermography.” Cuttito and SSgt James Moore introduced the concept that uses thermal imaging technology to quickly and effectively troubleshoot problems and reliability issues on Air Force assets. Cuttito showed a camera that can be used to diagnose multiple problems within aircraft, automotive, and civil engineering career fields, to include looking at an image on the camera to see excessive heat and even leaks that are not visible to the naked eye, keeping them at a safe distance. Moore said that infrared cameras would enable faster repair times and increase aircraft availability.

AMC opened an innovation campaign that can be accessed at https://usaf.ideascale.gov/ and is available 365 days a year.

First place finalist, TSgt Sharif R. Abouomar, Headquarters AMC/A4, Scott AFB, IL
Second place finalist, TSgt Brett M. Kiser, 521st Air Mobility Operations Wing, Ramstein Air Base, Germany
Runner-up SSgt Timothy Miller, 821st Contingency Response Squadron, plugs in a power bank into a Phantom brand tactical airfield lights at the 821st CRS building Nov. 14, 2019, at Travis AFB, CA.

USAF photo by TSgt David W. Carbajal