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SHOULD AIR FORCE RESERVE COMMAND CONTINUE PURSUING CAF DMO FOR ITS F-16 FLEET?

by

Kenneth R. Council, Jr., Lt Col, USAF

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INTRODUCTION

The Air Force Reserve Command (AFRC) is currently developing Distributed Mission Operations (DMO) capability for its Combat Air Forces (CAF) aircraft simulators. With the necessary upgrades, reserve pilots can train in a Live-Virtual-Constructive (LVC) environment while reducing the need to fly actual sorties for training. AFRC is committed to this new technology but lacks the funding to complete DMO upgrades for its F-16 Multi Task Trainers (MTT). The A-10 DMO program is progressing while the F-16 DMO program remains stagnant. This paper discusses the roadblocks to CAF DMO and determines if AFRC should continue pursing DMO capability for its F-16 MTTs. It provides a background of DMO, reviews the current state of AFRC DMO, discusses some advantages and disadvantages of DMO, and analyzes issues affecting the AFRC DMO program.

HISTORY OF AIRCRAFT SIMULATION

To discuss DMO, it is imperative to understand what DMO provides to the Air Force. This section provides a history of aircraft simulation and definitions of DMO. The first sustained powered flight in an aircraft took place at Kitty Hawk North Carolina on 17 December 1903.[1] It quickly became clear in order to learn how to fly a powered aircraft, a pilot needed to learn skills required to safely operate the aircraft. Rather than learning the necessary skills while actually flying the aircraft it was apparent a device was needed to simulate the aircraft while located on the ground.[2] An early example of this thought process was a device called the Sanders Teacher. According to Rolf, “The Sanders Teacher was a modified aeroplane mounted on a universal joint

linked to the ground. In it the student could learn the control movements necessary to maintain equilibrium."[3]

With the advent of World War One (WWI) and the development of military aviation, the military realized the need for training large numbers of pilots but chose not to use aircraft simulators during this time.[4] "In Britain the training system devised by Smith-Barry emphasized actual flying from the earliest stage. In France, where the Bleriot system was used, the pupil advanced through a planned evolutionary sequence. His first experience was at the controls of a Penguin, a monoplane with sawn-off wings capable of hopping at about 40 mph down the frog's meadow."[5]

With so many accidents accumulating during WWI flight training, the military began studying the discipline of aviation psychology.[6] A series of tests followed that required the development of devices designed to measure the performance of the pilot in various tasks thought to be essential to flying skills.[7] "It was mistakenly believed during this period that the vestibular apparatus enabled a person to sense orientation in the air as well as on the ground."[8] These devices were the beginnings of systematic approach to aircraft simulation.[9]

Advances in simulator technology following WWI included cockpits balanced on a stand allowing for motion in three axes, simulating effects of speed, adding propellers for realism, and primitive projection systems for visual displays.[10] These advances in design served to increase the realism during training prior to a trainee actually flying the aircraft.

Mr. Edwin A. Link is famous for developing the Link Flight Trainer in 1929.[11] He had a passion for flying but lacked the funds to pay for his training; this led him to build the first link trainer in his father's basement.[12] The Army Air Corps developed interest in Mr. Link's trainer after suffering 10 crashes directly related to pilot training.[13] "During World War II the Link

Trainer was used to teach more than half a million airmen. Today Link Trainers are produced for pilots, astronauts, and maritime vessel operators. A sophisticated offspring controlled by computers, rehearsed men for the moon."[14] The researcher began his aviation career training on the famous Link Trainer.

The 1940s and 1950s saw rapid advances in flight simulation. Link developed this first modern flight trainer designated the Celestial Navigation Trainer large enough to seat a pilot, navigator and bombardier allowing each crewmember to train in their own specialty.[15] Airlines began purchasing simulators with complex motion systems in the late 1950's that used six degrees of freedom.[16] In the 1950s and 1960s, the advances in computer technology and the introduction of motion systems provided advancements in the simulation field.[17] Many different visual systems designed during this period were unsuccessful including the shadowgraph or point light source projection.[18] Rolfe and Staples note, "The first visual system achieving widespread use on civil aviation simulators were based on a scale model viewed through a television system. . . . Serious development of closed circuit television visual systems began in the mid-1950s with monochrome versions being produced by all of the major manufactures. Redifussion produced the first colour system in 1962."[19]

In the 1960's and 1970's, image generations systems were introduced that allowed more accurate visual representation. These systems included computer image generation systems that were only capable of night presentations.[20] Since the 1970's, flight simulation has moved into the modern era based on refinements to the earlier technology advancements.[21]

"The last period of revolutionary change came with the introduction of microprocessor technology and the rapid growth in computational power it made available. Much of flight simulation technical developments since then have been incremental in nature with small, but

significant enhancements in visual display, motion platform, sound simulation and other areas."[22] Modern advanced aircraft simulators now mimic the aircraft so precisely that pilot upgrade and initial qualification training can be completed without actually flying the aircraft.[23] DMO is one of the new technologies in the advancement of aircraft simulation.

THE CONCEPT OF DISTRIBUTED MISSION OPERATIONS

A simple layman's definition for DMO is the networking of aircraft simulators together in a virtual environment. For example, Pilots training in a C-17 Weapon System Trainers (WST) can "link up" with loadmasters in a separate training device. This is an effective way for pilots and loadmasters to train together on such important tasks as emergency procedures, airdrop sorties, and practice of Crew Resource Management.

This C-17 WST Mobility Air Force (MAF) example of DMO is an extremely effective method of training aircrew but one that is on a much smaller scale than what DMO really provides. John Fawcett defines DMO as, "…an US Air Force readiness initiative to all warfighters to train as they would expect to fight; maintain primary combat readiness at home or deployed; and conduct mission rehearsal in an operational environment as realistic as necessary."[24] DMO encompasses live, virtual and constructive (LVC) aspects of simulation. The AFRC DMO Concept of Operations offers an easy to understand explanation of LVC:

> DMO training is a combination of warfighters conducting live training with virtual simulation and constructive simulation. Virtual simulation is a simulation involving real people operating simulated systems. Virtual simulations inject human-in-the-loop by exercising motor control skills (e.g., flying an airplane), decision skills (e.g., committing fire control resources to action), or communication skills (e.g., as members of a C2ISR team). A constructive simulation can include computer-generated inputs to the training scenario. These can include other friendly entities, threats, environmental factors, Command and Control (C2) or ISR inputs, etc. Real people make inputs into the simulations, but are not involved in determining the outcomes. Stated another way, a

> tanker simulator instructor might tell the simulator to simulate a receiver aircraft behind the tanker. The simulator will do this but will simulate a "perfect receiver"; not human flown with associated flaws. A real or virtual device can provide stimulus to a constructive simulation, but a computer determines how the constructive simulation responds.[25]

A report from the 677th Aeronautical Systems Group states, "Distributed Mission Operations (DMO) is critical to United States Air Force (USAF) readiness and is the cornerstone of Air Force training transformation in accordance with Joint National Training Capability Initiatives as directed by the Office of the Secretary of Defense (OSD)."[26] It is a United States Air Force readiness initiative to train as we fight, maintain readiness at home station or deployed, and to conduct mission rehearsal.[27] DMO represents the future of military simulation. Lt Col Andy Davidson-Taylor from the National Guard Bureau training office (NGB/A3TC) stated in a briefing, "DMO is the future for all warfighters; aircrew, air battle managers and battlefield airmen".[28] DMO's long-term vision is to enable full spectrum battlespace dominance in joint and coalition operations maximizing warfighter capabilities through training opportunities.[29]

The Air Force agency responsible for conducting DMO operations and exercises is the Distributed Mission Operations Center (DMOC), part of the 505th Distributed Warfare Group (DWG) located at Kirtland Air Force Base, New Mexico.[30] The DMOC conducts large-scale exercises known as VIRTUAL FLAG. The 505th DWG states, "VIRTUAL FLAG is a seven-day large force exercise connecting simulators and live aircraft around the world in a dynamic battlespace, challenging air, land and sea combatants in theater battle."[31] VIRTUAL FLAG incorporates over 30,000 entities including Army Fire Brigades, A-10, F-16, C-17, B-1, and the B-52.[32] The Distributed Mission Operations Network (DMON) is the network used to connect the LVC entities during VIRTUAL FLAG. "The DMON is a "network of networks" connecting

Air Force and other service distributed systems to the DMOC where they are assembled into a federation of LVC systems in support of VIRTUAL FLAG and joint exercise events."[33]

THE AFRC SIMULATION AND DISTRIBUTION MISSION OPERATIONS PROGRAM

At the time, the AFRC DMO program had its beginnings in the years prior to 2005. AFRC/XP was the owner of the fledgling program in its infancy and handled contract support for the F-16 program, in effect acting as the Systems Program Office (SPO).[34] The AFRC Director of Operations and Director of Plans and Programs recognized the organization needed re-structuring in order to have a successful DMO program and ordered the standup of a new office located in AFRC/A3T Tactics and Training Division.[35] The author was selected to stand-up the new office on 1 October 2005 and tasked to immediately begin solidifying and advancing the AFRC DMO program.

The author quickly interviewed and hired two contractors to assist with creating the new AFRC DMO program and began letting contracts to connect the AFRC A-10 and F-16 simulators to the DMON. A3TR collaborated with the Air National Guard (ANG) to pay a fair share contract for use of the Distributed Training Operations Center (DTOC). The AFRC DMO CONOP states, "The DTOC is a Distributed Warfare Detachment of the 132nd Fighter Wing, Iowa ANG."[36] The DTOC serves as the gateway for the Air Reserve Component (ARC) to connect to the Air Force DMO community.[37] The DTOC provides four core services for the ARC: Operations support, connectivity, planning and integration support.[38] The DTOC is able to host frequent small-scale events and collaborates with the DMOC in hosting VIRTUAL FLAG exercises.[39] AFRC/A3TR scheduled regular small-scale DMO events using the DTOC and the AFRC A-10 simulators providing valuable and cost effective training.

The ARC, which consists of AFRC and the ANG, connects to the DMOC and DMON through the Air Reserve Component Network (ARCNET).[40] The DTOC manages the ARCNET, which links all DMO capable ARC simulators, Mission Training Centers (MTC), other networks, other government sites, and contractor test sites in a secure environment.[41] For example, two AFRC A-10 simulators from Whiteman Air Force Base (AFB) can link with two ANG A-10 simulators from Gowon Field in Boise Idaho to fly a four-ship formation connected to the DMOC through the ARCNET, where they link with hundreds of other entities across the nation.

The DTOC is responsible for developing and maintain certification standards to ensure the ARCNET meets the DMON network standards.[42] These standards, established by the CAF DMO Standards Working Group, consist of common synthetic natural environments that include terrain surface characterization, objects on the terrain (i.e., buildings, lighting, cultural features), weather, and atmosphere.[43]

The ARCNET allows for connections to other government training networks. It is the connection to the Joint Experimentation and Training Network and connects to the European gateway through the Warrior Prep Center WPC).[44] The AFRC CONOPS states, "through the WPC's ARCNET portal, ASOS (Air Support Operation Squadrons) will be able to access the DTOC, the 603rd Air Operations Center, constructive models such as the Air Force Synthetic Electronic Reconnaissance and Surveillance (AFSERS), and can integrate collaborative tools and simulated voice radios during tactical and operational level exercises in the theater of operations."[45]

AFRC has numerous CAF and MAF simulators capable of connecting to the ARCNET. By far the most robust program is the A-10 program consisting of four FMT's located at

Whiteman AFB and Barksdale AFB. These FMT's are fully DMO capable including the necessary 360-degree visual systems.[46] The A-10 simulators from both bases participate in weekly training events with other ANG, AFRC and Army units using the DTOC for its support.[47] The program office secured four KG-175 TACLANE network devices to connect the F-16 simulators to the network.[48] Unfortunately, the F-16 MTT's do not participate in DMO training events although capable of doing so, due to the lack of 360-degree visual systems and security standards issues.[49] 360-degree visual systems are required in CAF DMO to conduct anything resembling adequate training. Lack of visual systems funding is the primary issue for AFRC's F-16 DMO program. AFRC owns six F-16 MTT's located at Carswell Joint Reserve Base (JRB), Homestead Air Reserve Base (ARB), and Luke AFB.[50] All of the A-10 and F-16 simulators network to the DTOC through the ARCNET for DMO training.[51] Operations and Maintenance (O&M) contracts funding is place for both CAF programs.[52]

AFRC also has numerous MAF training devices including C-130, C-5, and C-17 simulators. The majority of these simulators are already DMO capable or are planned to be capable in the future.[53] For example, All C-17 simulators are DMO capable. The active duty and reserve units share many of AMC simulators and as such, AFRC follows the commands programming guidance for MAF simulators.[54] AMC is the lead command for mobility DMO.[55] AFRC's MAF assets connect to the DMOC through AMC's Distributed Training Center located at Scott AFB, which is similar in function to the DTOC.[56] In short, our MAF simulator DMO program is on track with proper funding and support from the lead command.

The AFRC DMO Programming office also plans robust DMO capability in Space, and Rescue mission areas. AFRC currently does not have any space simulation assets but plans on using the Air Force Space Command Center network if space simulation capability

materializes.[57] The lead command for DMO Space is Air Force Space Command.[58] The office is actively seeking a Para-rescue Jumper and Combat Rescue Officer initial qualification and medical trainer with DMO capability.[59]

DISTRIBUTED MISSION OPERATIONS ADVANTAGES

DMO offers many advantages for AFRC and the warfighter. The primary advantages are enhanced training opportunities, mission rehearsal scenarios, and reduced costs. DMO offers training opportunities that do not exist elsewhere. DMO allows training between individual units and in large-scale events. The DTOC focus is on frequent, small-scale, team level tactical DMO events.[60] The training offers scenarios created to be current and relevant.[61]

Units can now rehearse missions at home through the networks to prepare for upcoming deployments jointly. For example, AF units can train jointly with Army ground Patriot units and with allied units before deploying which aids in preventing blue on blue engagements in theater.[62] The training is available 24 hours a day, 7 days a week and offers an integrated scheduling system in support of coordinated multi-site Aerospace Expeditionary Force (AEF) training and rehearsal.[63] Not only is the type of training beneficial, but also DMO is a cost savings tool.

In 2007, the service mandated a 10 percent reduction in flying hours in an effort to save money.[64] DMO can fill this flying hour training gap by shifting flying from the aircraft to the simulator.[65] A typical VIRTUAL FLAG exercise saves the Air Force approximately $30 million in flying hour funds.[66] It can also save costs by reducing temporary (TDY) duty travel. Units would no longer need to send personnel to as many live fly exercises, in turn saving thousands of dollars.

Other unforeseen benefits are emerging from DMO. Homeland defense units primarily used the DTOC's Homeland Defense Network (HLD) to participate in larger Department of Defense (DoD) command and control exercises and air defense units utilized HLD for preparing for defense of the National Capital Region (NGR).[67] The DTOC has expanded its HLD training scenarios to include the Western Defense Sector, Eastern Air Defense Sector and the Alaskan NORAD Region.[68]

DISTRIBUTED MISSION OPERATIONS DISADVANTAGES

DMO does not represent a perfect solution to training and it does have some disadvantages. Keeping current systems relevant and upgraded with rapidly changing technology is expensive.[69] Another disadvantage for DMO is Multi-Level Security (MLS) or the lack thereof. Until MLS reaches maturity, some coalition and joint partners are unable to participate in certain classified events due to not having the proper clearance.[70] For example, MLS hides classified capabilities from users not cleared for specific security levels, but still allows them to participate in the overall event. Not having a robust MLS capability diminishes the full potential of DMO.[71]

A similar disadvantage to MLS is the security of the networks themselves. The importance of DMO to the warfighters training and mission rehearsal makes DMO a lucrative target for foreign intelligence agencies.[72] The AFRC DMO CONOPS states, "While traditional hurdles of force protection and security are still critical concerns, DMO adds an additional challenge to Information Assurance due to the number of nodes integrated at one time. Having more avenues (i.e., the internet) to exploit and attack our systems and forces, the enemy has a greater opportunity to disrupt our DMO capability."[73]

AFRC CAF simulators are not full motion and hence cannot provide a realistic sense of flight to the pilot. One cannot feel the G-forces while dog fighting in an F-16 MTT. The majorities of MAF simulators are full motion capable with six degrees of freedom and provide a realistic flight experience. CAF full motion simulators are expensive and may provide negative training for the pilot due to the lack of G-forces feedback.[74]

A disadvantage unique to the ANG and AFRC is individual availability. Many traditional reservists hold primary jobs other than the military. From the author's experience, pilots in the reserves primary jobs are as airline pilots. It is difficult to arrange both airline and reserve schedules each month in order to accomplish both jobs. Reserve pilots want to train in the aircraft instead of a simulator during the limited availability each month to accomplish training.

ISSUES AFFECTING THE AFRC F-16 DISTRIBUTED MISSION OPERATIONS PROGRAM

AFRC F-16 DMO faces many issues affecting its ability to obtain a robust DMO program. The first is the problem of dissimilar aircraft than the lead command. F-16's flown by AFRC are the older block 30 models, meaning the lead command (Air Combat Command) does not fund our upgrades.[75] We act as our own lead command. The primary reason F-16 MTT upgrades have languished is due to lack of funding. Each year, AFRC ranks very low on Air Combat Command's (ACC) list of funding requirements and as a result, AFRC is unsuccessful in obtaining the upgrades for full DMO capability.[76]

An issue compounding this problem is the fact that AFRC functions as an O&M command; meaning AFRC cannot use procurement dollars to upgrade equipment.[77] As the lead

command, ACC funded AFRC's A-10 FMT upgrades because both commands use the same type of aircraft.[78] AFRC's total budget for simulation in FY 2010 is $4.9 million and $32 million spread over the 2010-15 Future Years Defense Plan.[79] The necessary 360-degree visual displays estimated cost of $4 million would not be affordable within the current budget even if the command could spend O&M funds to procure the systems.[80]

AFRC is planning for the future of DMO. AFRC funded new construction projects at both F-16 MTT locations to house DMO capable simulators in secure facilities.[81] AFRC leadership also approved labor over-hire authority at each simulator location to provide Project Officer/Quality Assurance Representatives.[82]

The primary piece of the puzzle to completing the F-16 MTT DMO upgrade is funding for 360-degree visual display systems. According to Mr. Lollar from HQ USAF/XOOTE, "Visual system technology is critical to obtaining maximum effectiveness from DMO training."[83] There are only two avenues available to AFRC for funding the 360-degree visual displays. The first way is funding from ACC, which has not proved successful over the past five years.[84] The second way is through funding from the National Guard and Reserves Equipment Account (NGREA).[85] NGREA is funding appropriated by congress to the ANG and AFRC each fiscal year for equipment upgrades.[86] Every fiscal year, AFRC vets a requirements list submitted from the various wings listing 4th Air Force, 10th Air Force, and 22nd Air Force's top unfunded equipment priorities.[87]

The AFRC submission for the fiscal year 2010 NGREA list included items such as; Large Aircraft Infrared Countermeasure Systems, A-10 Missile Warning Systems, Data Link and Secure Communications, and repairing C-5 corrosion cracks.[88] The key point to illustrate with this list is the fact that the equipment requested is all aircraft related. Nothing on the funded list

relates to aircraft simulation. All items on the list are requirements for the warfighter to conduct the wartime mission.

Although the AFRC CAF community recognizes the need for funding the F-16 DMO visual display upgrades, they are unwilling to rank it high enough on the unfunded requirements list because of more important aircraft requirements and because of NGREA limiting criteria.[89] The unfunded list specifies certain criteria rankings: Category I items are considered "mission critical", category II items are "mission essential", and category III items are "mission desired".[90] Simulator items in the CAF community normally fall under category III.[91] In the author's opinion, the majority of pilots prefer flying the actual aircraft not the simulator. This is particularly true in the CAF community because their simulators do not replicate the actual aircraft as well as MAF simulators.

AFRC is rapidly approaching the time when reduced flying hours will mandate less training in the actual aircraft. This is already happening to some extent, but the AFRC CAF community has not felt the effects as of yet. According to Mr. Mark Whitlow, Chief of AFRC's flying hour branch, when the AF mandated a ten percent flying hours reduction for FY2008-2013, AFRC reduced the MAF flying hours due to its ability to make up training deficiencies while supporting Other Contingency Operations.[92] There are usually excess flying hours in the MAF program since America entered the Global War on Terror because flying is now paid for using the Transportation Working Contingency Fund (TWCF).[93] The concern is that when OCO goes away the TWCF funds will dry up, leaving AFRC with not enough flying hours to maintain its mission.[94] In addition, F-16 aircraft have maintenance and wing crack issues that may reduce flying hours.[95] AFRC must have DMO devices in place when flying hours eventually are reduced.

The final issue affecting the F-16 DMO program is the Joint Strike Fighter (JSF) program. It is unknown at the time of this paper if the two unit equipped (UE) AFRC F-16 units will convert to the JSF. Plans released on 27 September 2010, call for AFRC units that are classic Reserve associations with the active duty, to convert to the F-35 mission at the same time as their active duty counterparts, beginning in 2013.[96] The associate units converting to the F-35 mission are located at Luke AFB and Hill AFB.[97] According to Mr. Woodrow, the F-35 program did not incorporate DMO capability in its contract like the F-22 program because the Joint program did not require the capability.[98] The facilities AFRC funded are large enough to house JSF simulators in the event we receive them in the future. AFRC needs to continue to maintain and upgrade its F-16 MTT's at the UE locations until JSF plans solidify.

CONCLUSION

Based on the information presented in this paper, it is imperative for AFRC to continue pursuing CAF DMO for its F-16 simulator fleet. In the author's opinion, the advantages of DMO such as enhanced training opportunities, detailed mission rehearsal scenarios, and reduced flying hour and TDY costs far outweigh the costs of technology, the risk of security issues and the lack of full motion simulators. While conducting briefings to the AFRC CAF community, the author noted concerns from AFRC pilots that DMO would take a way flying. On the contrary, DMO's purpose is to augment flying training. With the reduction in flying hours continuing every year, AFRC must have a robust DMO solution for its pilots to fall back on.

This paper highlighted the roadblocks to AFRC's CAF DMO program primarily, a lack of funding for 360 degree visual displays, a lack of NGREA funding for simulation, and by necessity, having to provide its own lead command functions because of dissimilar block 30

aircraft. Although AFRC worked diligently with the lead command and other agencies to fund a dedicated DMO program office, a PO/QAR at each site, rebuild and expand secure facilities, and provided O&M support for sustained operations, the illusive 360-degree visual display issue could not be resolved during the past five years.

Since the creation of the AFRC DMO office in 2005, the staff continually proposed creative and innovative options to acquire funding for the 360-degree visual displays. Unfortunately, each attempt met with limited success. According to Mr. Charlie Woodrow, the AFRC DMO Program Manager, this major roadblock to the program may have met a resolution. AFRC/A3TR suggested a creative solution to supply ACC with one of its funded A-10 FMT's for use at Moody AFB in support of Total Force Integration in return for ACC purchasing the much-needed F-16 MTT 360-degree visual displays.[99] This would validate the AFRC DMO program's five-year challenge of completing the necessary F-16 MTT upgrades.

Installation of the 360-degree visual displays for the F-16 MTT's is a good first step in the right direction to begin solidifying a viable CAF DMO solution for AFRC. The author suggests three additional recommendations for the CAF DMO program to make it a viable option for AFRC. The recommendations are additional manpower for the DMO program office, hire a dedicated contracting officer, and mandatory concurrency of the simulator with the configuration of the aircraft.

First, the AFRC DMO office is woefully undermanned and has been from its inception. One officer and two contractors is not enough manpower to adequately manage the growing needs and provide proper expertise to the CAF and MAF DMO program. While leading the organization from 2005 to 2007, the author observed the office staff focusing on extraneous and additional tasks necessary for the program leaving little time to focus on primary duties of the

job. One or two additional contractors would alleviate the workload challenges, allowing the program to function more efficiently.

Second, a dedicated contracting officer is a necessity for the program. The current office manning does not have the proper expertise in the contracting arena, although they all put forth a valiant effort in learning as much as possible about the field. This issue ties in with the first recommendation of the contractors focusing on other tasks instead of their primary duties. Although the DMO program office works closely with AFRC Financial Management (FM), it does not provide the expertise and flexibility that an in-house contracting officer provides. This person does not necessarily need to be a full-time manpower equivalent but could be a Reservist or part time contractor assigned to the office for a minimum of 60 days per year. The final two months before fiscal year closeout is traditionally the busiest time for the office due to the challenge of executing the funding and contracts before FM closeout. This would be the perfect time to have a contracting officer working issues in the office.

Finally, the F-16 MTT's must be upgraded concurrently with AFRC's F-16 aircraft. In the case of the C-17, software and hardware upgrades are installed in the simulator before being installed on the aircraft. This provides a huge benefit to the crewmembers, allowing them the opportunity to train on the equipment and software before seeing it on the aircraft for the first time. Conversely, the AFRC F-16 program installs software and equipment on the aircraft first in an attempt to get the newest upgrades to the warfighter. Although it allows the warfighter to have the best equipment available for deployments, it does not give them ample opportunity to train with the upgrades. By working with the AFRC MTT sub-contractor and changing the mindset of "aircraft first", the AFRC DMO program office can ensure proper training for its pilots by keeping the simulator concurrent with the aircraft.

In sum, F-16 DMO provides a partial solution for the flying hour gap and provides valuable training for AFRC's pilots. This training is immensely more effective with the addition of the 360-degree visual displays. With the purchase and installation of the visual displays and the additional suggested recommendations, AFRC's F-16 DMO program will be back on a solid foundation, providing the AFRC warfighter with a more complete DMO training system. The Programming office can shift its focus to acquiring necessary upgrades for the F-16 and A-10 programs and for other weapons systems such as Space and Rescue. More importantly, the AFRC warfighter can begin taking advantage of what DMO has to offer by participating in regular F-16 DMO events through the DTOC.

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